



FRIDAY, DECEMBER 22.

Contributions.**The Joy Valve Gear and the Hackworth Patent.**NO. 43 DUANE STREET, New York.
TO THE EDITOR OF THE RAILROAD GAZETTE:

I recently read in your paper copy of a communication from John W. Hackworth, of England, in which he alleges that Mr. David Joy's Valve Gear is an infringement of some patents which he took out in this country eight or ten years ago. Having been much impressed with the Joy Valve Gear and intent on using it, I have taken the trouble to compare the two motions, with the view of satisfying myself as to whether there is any foundation for the claim made by Hackworth or not; and believing there are a good many others interested who may not have the time or opportunity to look into the matter for themselves, I address a letter on the subject.

I am an old mechanical engineer and inventor, and have kept track of a good many patents in my time. If my recollection serves me right, Hackworth first brought out his patent gear over twenty years ago in England. It was tried there and failed badly. He took his motion from an eccentric then, and so he does now, which in the first place is a fundamental difference to Joy's gear; for Joy has no eccentric at all, as he gets his motion from the connecting rod. The end of Hackworth's eccentric-rod or lever worked back and forth in a straight groove, very different to anything in Joy's arrangement. The consequence of this device of Hackworth's was that the centre lines are divided, part of the gear being inside and part of it outside, and it has got to be twisted to fit in; whereas every part of Joy's gear is brought into the vertical plane of the piston-rod and crank.

The course of time, the Hackworth patent to which I have referred expired, since which time the same eccentric arrangement has been embodied in patents by other inventors, but not by Joy.

On referring to Hackworth's United States patents, to which he refers in his circular, I see it consists of the same 20-year-old things with trifling alterations or recommendations as to the best point on the eccentric rod for fixing his valve-rod.

What there is in those patents to entitle Hackworth to complain of Joy I cannot see. They are totally different to Joy's gear. And this seems to have been the opinion of the United States Patent Office, for on looking over Joy's United States patent I see at folio 45 that the examiners inserted a disclaimer by Joy to the effect that he was aware certain letters patent (Hackworth gear) "show an engine in which a valve-rod is pivoted to and operated by a lever which is guided by an eccentric on the main shaft, the end bearing of such lever sliding in a grooved or slotted pivoted block, I make no claim, therefore, to the construction shown in such patent." Which is a proof that the examiners had this Hackworth construction right before their when they were considering Joy's application, and it is very certain that if they had conceived it to be in any way an infringement of Hackworth's they would then, according to practice and custom, have refused to give Joy a patent and not have granted him one, and their granting him one speaks volumes in his favor.

Now I think this evidence a good deal more reliable as to the novelty of Joy's patent than what a disappointed rival may choose to say. In my judgment Hackworth has no case at all, and I consider his circular to be an unjustifiable outrage on Joy, and I hope there is some way of punishing acts of this description, especially when addressed from a safe place abroad.

CYRUS B. MORSE,
Mechanical Engineer.**An Experiment in Burning Coke.**

PHILADELPHIA, Dec. 8, 1882.

TO THE EDITOR OF THE RAILROAD GAZETTE:

Coke has never been much used on American railroads, and now locomotives are so constructed that raw coal can be burned with facility and economy the occasion will probably never arise; nevertheless, the occasion has arisen from the incomplete burning of coal, or in other words the loss by the smoke-stack of inconvenient quantities of smoke. The agitation about smoke from chimneys quickly extended from London to Chicago, whose atmosphere frequently reminds one of the English metropolis by its frequent but momentary smoke-fogs.

The attention of railroad men has been called to coke as a clean burning material by the agitation about smoke, especially in Chicago and Philadelphia. General experience with coke in the ordinary fire-box of passenger locomotives may be summed up as follows:

There is no difficulty in lighting nor in making steam for short runs; but if the run is an extended one it is found difficult to keep sufficient fire for even very moderate steam, and the train comes in late, time having been lost almost entirely on the last few miles by the impaction of the ashes over the grate-bars. On opening the door of the fire-box the fire seems bright and lively, but will be found to be very thin, a bed of dead coke-ash lying under it. This difficulty probably arises from that quality in coke which makes it useful in blast furnaces, namely, its resistance to pressure even at considerable temperatures which prevents its break-

ing form until the base of the blast is reached. The Connellsville coke region has developed almost entirely since the war, its four hundred ovens of a few years since having increased to nearly 10,000—at last reports there were 8,000, with many new ovens under contract—this large industry growing mainly out of this fitness of coke for blast fuel. The steel gray coke of this manufacture differs considerably from the black and softer coke of gas manufacture; and in the grey cokes there are differences by the coal and treatment as to the amount of ash, hardness and tendency to coke. Unfortunately there is little knowledge obtainable as to this last and most important quality as regards use in locomotives.

One of the large proprietors of the Connellsville region has been anxious to have an experiment in the use of coke for locomotives made under other conditions than afforded by the ordinary fire-box; and the experiment was therefore made in one of the large-furnace locomotives in use on the Reading road. The experiment (Dec. 7) had the double purpose of testing coke-burning and of making a comparative test as to the relative values of a bituminous coal and coke from the same.

Engine No. 362 has 22 x 24 in. cylinders, 9 ft. 6 in. x 8 ft. area of fire-box, 1,092 square ft. total heating surface, weight of engine 105,000 lbs. The train consisted of 131 loaded coal cars and two cabin cars, weighing in all 2,463,000 lbs.

The train started from Palo Alto at 7½ a. m., but we did not board the train until it reached Reading. The day, which had begun as mild and slightly cloudy, had by this time (12:30 p. m.) become very cold. The thermometer averaged 23 or 26 degrees and at one time fell three degrees lower; the water evaporation consequent on the effects of this temperature could not have been less than 10 per cent. in excess of that which would have been required on the same run in summer. The day was also unpleasantly gusty, and except as to condition of track surface, not one which would usually be chosen for an experiment of this kind. Owing to the fireman's almost total inexperience with coke there had been trouble in making steam at the start, but this difficulty had been entirely overcome long before reaching Reading. When we left Reading the steam gauge showed 120 lbs., which gradually rose to 125. The fire was bright, but not so hot as in the next hour. We were obliged to make an inconvenient stop on signal at the mouth of Black Rock tunnel; and in starting up were in great danger of breaking the train in two on the heavy grade and curve there but had no difficulty, nor was there any evidence during the passage of the tunnel that any particles of fire or cinders were being thrown by the draught.

Between the tunnel and Pottstown steam rose to nearly 180 and was several times blown off. One of our party went forward to observe the fire from the front, and reported much less appearance of combustion in the flues than when burning bituminous coal; the fire, however, was very powerful at the back.

In burning coke it is quite a necessity to humor the boiler in working the injector; but during the experiment the fireman was having a very easy time, as we could observe from the forward caboose. The engine had loaded with 9,800 lbs. of coke, but as we approached Bridgeport the supply of coke began to fail, and for some time was very sparingly used, so that the steam pressure fell considerably. It was therefore thought best at Bridgeport to take on some anthracite. The fire, so far as could be observed from beneath the grate, was entirely dead for a considerable thickness above the grate surface; and it was doubtful what would be the effect of fresh coke. A full supply of coke was however thrown on as we left Bridgeport; and to the surprise of every one the gauge rose steadily from less than 120 to above 128. Soon, however, the supply of coke was entirely exhausted, and the engine was allowed to run on without further fuel until the gauge had fallen to 104. The fire was then bright above, and when raked showed only a very thin layer of dead ash over the bars. The anthracite "buckwheat"—that is a cleaned waste coal of perhaps two sizes lower than chestnut—was thrown on in quantity. For some time it appeared probable that the fire had been allowed to fall too low, the gauge fell to 88, but rose very gradually to 120 and finally to blown-off pressure.

Our party left the train at West Falls satisfied that this fire-box has peculiar advantages over other or at least ordinary forms adapting it to difficult fuels. The experiment impressed one as successful. What the effect of the stronger draught of greater speed would have been was not fully apparent.

Distance run.....	83 miles.
Weight of train.....	2,759,000 lbs.
No. of cars (rated as four-wheel).....	131.
Length of train.....	1,630 ft.
Running time.....	6 hours 32 minutes.
Coke used, including firing up.....	9,800 lbs.
Water used.....	8,365 gallons.
Water evaporated per lb. of fuel used.....	7.09 lbs.
Temperature of water.....	41°
Temperature of atmosphere.....	23°

We hope a report of the experiment soon to be made on the value of the bituminous coal furnishing the coke may be given to the readers of the *Railroad Gazette*. C. L. C.

The Dock Connection Line of the Richmond & Alleghany Railroad Company, Richmond, Va.

The Richmond & Alleghany Railroad extends from Richmond, Va., westwardly to Clifton Forge, following the line of the former James River & Kanawha Canal, and with a branch to Lexington, Va., operates at present 250 miles of road. The promoters of this line believe that it is destined to become one of the main thoroughfares for western traffic to tidewater, as soon as its plans for western connections

and extensions to Pittsburgh, Toledo, Chicago and other important cities are realized. The Richmond docks, with extensive wharf and storage space, owned by the railroad company, in connection with the government improvements on James River, admit of sea-going vessels being brought into the heart of the city. To make tidewater connection therefore, the railroad company had only to extend its track from the upper part of the town to its dock property, which extension, however, owing to the sudden and rapid fall of the river at this point, and to the difficult location through the city, offers so much of interest to the engineering profession that we are glad to be able to present to our readers the following notes, explanatory of the illustrations in this number: Plate I. represents an elevation of the structure, showing it in sections of its length, and Plate II. the details of its construction.

The entire distance from the commencement of the connection line at Seventh Street to the ship lock is 1½ miles, the distance to the end of the trestle proper is nearly one mile. The total fall from the upper basin to the dock level is 68 ft.; from the upper basin to mean water level in James River, 83 ft. This heavy fall in such a short distance required a grade of 105 ft. to the mile, or two feet fall in every 100 ft. horizontal, which grade is continued without break from Eleventh street to Twentieth street, or a distance of 3,700 ft. The highest point of the track is 60 ft. above the foundations. Between Thirteenth street and Virginia street the curve is on a 4 degree curve. The depot lot of the Richmond & Danville Railroad Company is crossed overhead by two iron bridge spans, each 137 ft. long, resting on three granite piers.

A special tank engine with very efficient brakes was built for the service on this connection line, constructed to run equally well backwards and forwards, the total weight of which is 45 tons in full working order. Weight on drivers, 40 tons; rigid wheel-base, 14 ft. 6 in.

Owing to the high prices for iron-work at the time this work was done, the comparative estimates made for an all-iron trestle, for an iron bent trestle with trussed wooden girder superstructure and for an all-wood trestle, resulted in favor of the latter, even taking maintenance and insurance into consideration.

As will be seen from the illustrations, the principles governing the design are the provisions for counteracting the downward thrust of the train on the heavy grade, and the necessity for tying and bracing the trestle in every direction, owing to the large number of crippled bents and the great difference in the elasticity and manner of foundations. The trestle is a one, two or three-tier trestle, with 15 ft. openings, height of each regular tie about 21 ft. The size of the main bent lumber is 12 in. x 12 in.; X bracing on bents 3 in. x 12 in., fastened with ¾ in. bolts; longitudinal bracing in half height of each tier, 4 in. x 6 in., fastened with ¾ in. bolts from batter post to batter post of successive bents; inclined bracing to resist downward thrust of train two 8 x 12 in. pieces, notched and shouldered from cap of one bent to sill of next one. Between the ties four 12 x 12 in. sticks are used as longitudinal stiffeners, drifted and double-locked to sills and plate of tiers. The foundations are alternately blocking, masonry, piles and cribs. Under each rail two 7½ x 15 in. stringers are used, with ¾ in. packing bolts; 8 x 8 in. x 10 ft. cross-ties, spaced 16 in. centres; 8 x 8 in. guard rails notched 1 in. on ties and bolted every other tie with ¾ in. bolts. The bulk of the pine lumber was brought from Georgia, Florida and North Carolina; the balance, pine and oak, from the valley of James River. The trestle contains 1,300,000 ft. of lumber.

Attention is called to the special construction at street crossings, to the 30 ft. spur-braced openings between Seveneenth and Eighteenth streets, to allow carts to back up to vessels lying in dock along side of trestle, to the construction in Tenth street level to accommodate canal traffic during construction as long as possible, and to the novel manner of getting over the heavy grade in the bridge construction. Each span is level, the upper one being placed about 3 ft. above the lower, while the grade in each span is preserved by altering the attachment of floor beams to web posts. The horizontal strut inserted in each truss from one end to the other, just above the track, is intended to stiffen the web-posts and transmit the downward thrust of the train to the piers.

The location of the line in the midst of streets, houses, canal and locks, and many other requirements, being confined by foreign property on all sides, and the necessity of keeping up canal navigation during the greater part of the time given to construction, caused this work to require the greatest attention in design and construction. Field work was commenced Oct. 14, 1881, and the line finished and tested by the passage of heavy engines and trains, with very satisfactory results, May 14, 1882.

The line has been constructed under the general supervision of Mr. Decatur Axtell, Vice-President Richmond & Alleghany Railroad Company. The location, estimates and design were made and the work constructed under the direct supervision of Walter G. Berg, Engineer in charge, with H. Bassloff as Principal Assistant Engineer. Philip Eder, of Bound Brook, N. J., was contractor for the masonry piers of the bridge, the iron superstructure being built and erected by the Clarke Bridge Company, of Baltimore, Md. G. R. Williams, of the firm of Jesse Adams & Co., of Amherst County, Va., was contractor for the erection of the main trestle work. All materials for trestle were supplied by the railroad company, and the balance of the work, as grading, track, foundations, etc., done by company's forces.

We are indebted to Walter G. Berg, C.E., for the drawings from which the engravings were made, and for the particulars contained in this description.

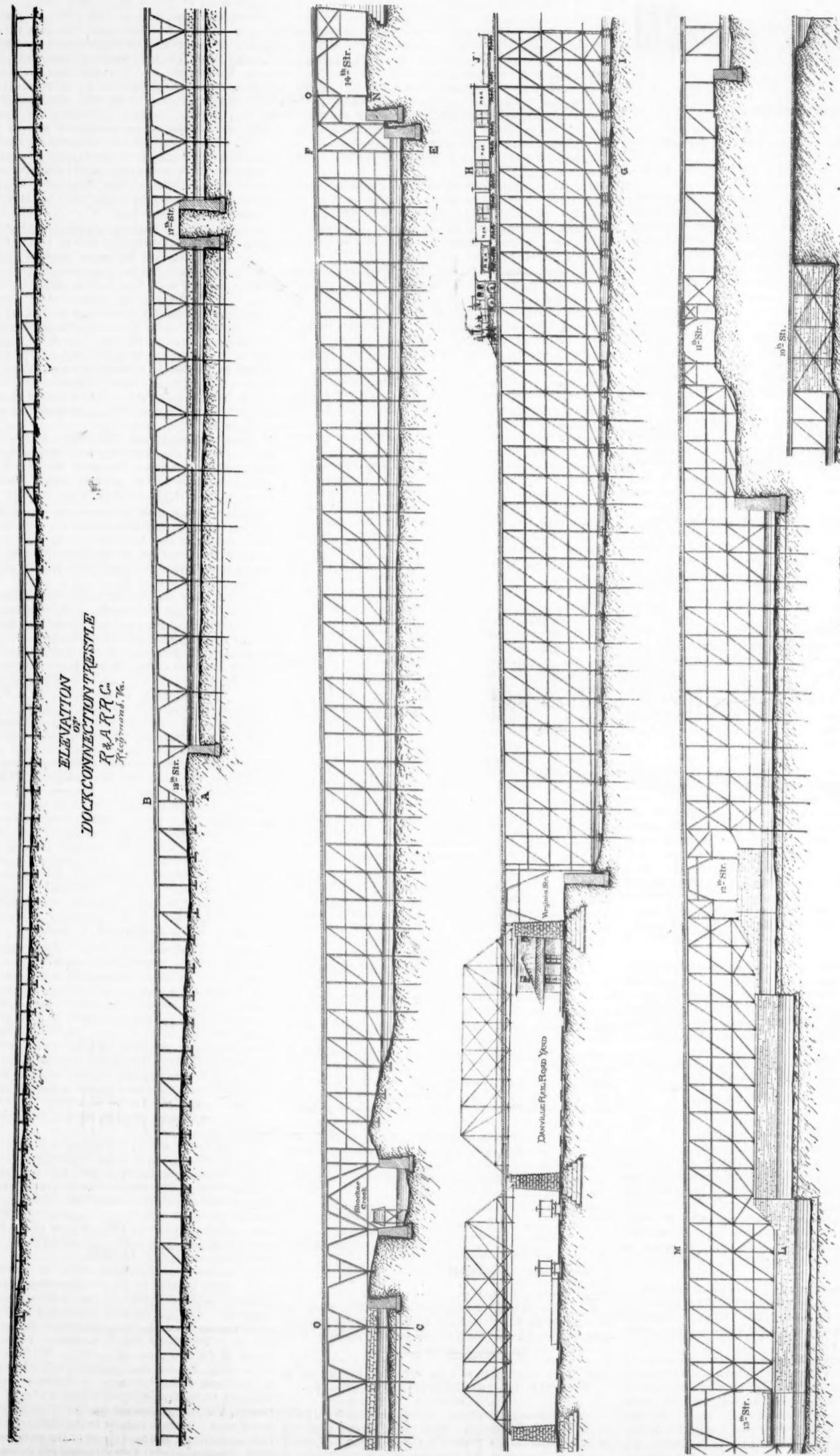
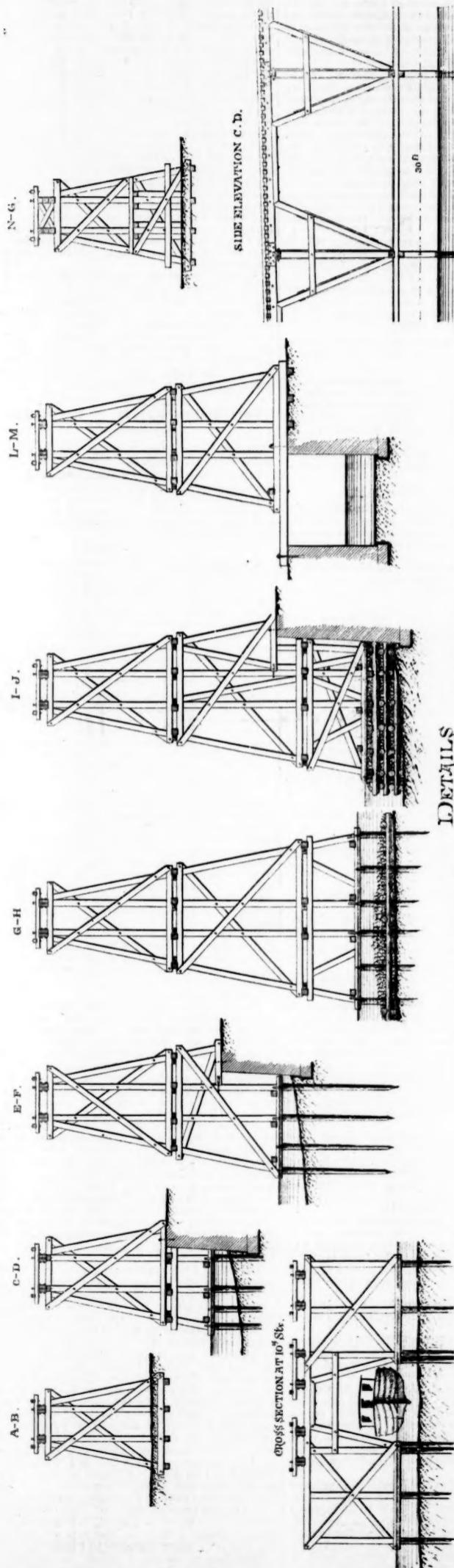


PLATE I.

(For Description see page 783.)



DOCK CONNECTION TRESTLE

Richmond & Allegheny RR

Richardson's Va.

October 23, 1882.

Design by Mr. J. W. Vining.

Wm. C. Berg, Eng. in Charge.
J. F. P. Johnson, Div. Eng.

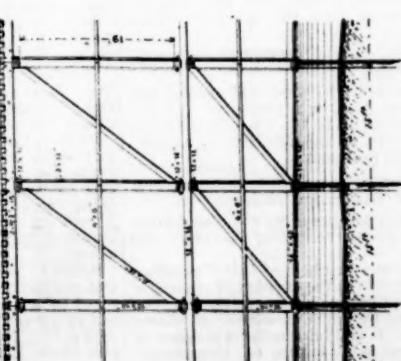
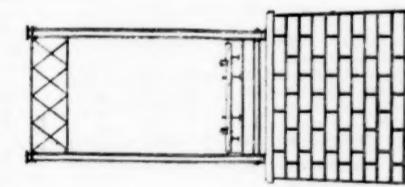
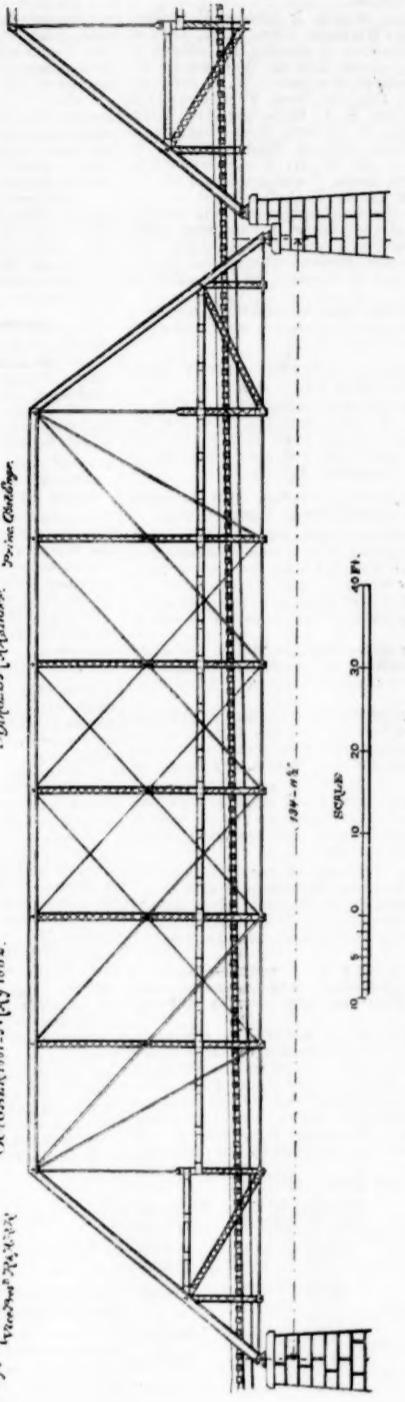


PLATE II.
(For Description see page 788.)

Joint Executive Committee—Passenger Department.

At a meeting held Dec. 5 and the four following days there were present representatives of the lines from New York to Chicago and St. Louis, as follows:

Balt. & Ohio, C. K. Lord; Boston & Albany, E. Gallup; Canada Southern, W. H. Hurlburt; Clev., Col., Cin. & Ind., Indianapolis & St. Louis, A. J. Smith; Ind., Bloom. & Western, H. M. Bronson; Lake Erie & Western, G. W. Smith; Lake Shore & Michigan Southern, W. P. Johnson; Michigan Central, O. W. Ruggles; New York Central & Hudson River, H. J. Hayden, E. J. Richards; New York, Lake Erie & Western, Jno. N. Abbott; New York, Pennsylvania & Ohio, A. E. Clark; Ohio & Mississippi, W. B. Sattuck; Pennsylvania, J. R. Wood; Pennsylvania Co., Pittsburgh, Cincinnati & St. Louis, Vandalia Line, E. A. Ford; Wabash, St. Louis & Pacific, H. C. Townsend.

The Chairman said that the meeting was called in accordance with the resolution adopted at the last meeting of the Committee, under which the first business to be taken up was the consideration of differential fares to intermediate points over the Indiana, Bloomington & Western, and Lake Erie & Western roads.

As the representatives of the roads named were not present, it was considered advisable to postpone action thereon until their arrival.

I.—CORRECTION OF DIFFERENTIAL FARES BETWEEN ST. LOUIS AND PHILADELPHIA, OVER THE C. & O. R. R.

The differential fares awarded at the meeting of November 21 to the Chesapeake & Ohio Railroad, between St. Louis and Philadelphia, were found to be higher than the same fares to New York, and were reduced, 1st Class to \$20.50; 2d Class, \$18.25; Theatrical, \$13.75.

II.—ADJUSTMENT OF DIFFERENTIAL FARES AND DIVISION OF TRAFFIC BETWEEN DIFFERENTIAL FAIR POINTS.

The question was discussed at length, whether the differential fares could be readjusted, with a view to securing to each company its share of business upon the basis of 1881 (with such modifications as will be considered equitable), or whether the differential fares should remain as at present, and that monthly money settlements of balances should be made.

It was considered that in either case it would be necessary to agree upon the percentage of the passenger traffic that should be carried by each of the routes between differential fare points.

The division of the passenger traffic from and to differential fare points, was then taken up, and the Commissioner recommended certain divisions, subject to further argument, in case the recommendation was not satisfactory to any of the parties.

III.—REQUEST OF I. B. & W. AND LAKE ERIE & WESTERN RAILROADS FOR DIFFERENTIAL FARES, OR THE RE-ESTABLISHMENT OF COMMISSIONS FROM DIFFERENTIAL FAIR POINTS TO INTERMEDIATE POINTS.

The question which was discussed at the last meeting, how the interests of the Indiana, Bloomington & Western and the Lake Erie & Western Railroads could be protected prior to the establishment of differential fares from differential fare points to intermediate points, was discussed at length.

It was considered that the payment of commissions to intermediate points was not admissible, without endangering the establishment of the differential fares between differential fair points.

It was decided that differential fares should be temporarily established via the Indiana, Bloomington & Western and Lake Erie & Western to be in effect for 60 days, in order to enable these roads to secure a share of the intermediate business, until a more thorough establishment of differential fares to intermediate points can be accomplished, and the following differential fares were recommended by the Commissioner and adopted by the meeting, viz.:

Between St. Louis and New York :

	1st class.	2d class.	Theatrical.
Wabash, I. B. & W. and B. & O. N. Y. P. &	\$20.75	\$18.50	\$18.00
O. & St. L. I. B. & W. and B. & O.	20.75	18.50	18.00
I. & St. L. C. C. C. & I. and N. Y. P. & O.	20.75	18.50	18.00

From St. Louis to Buffalo :

	1st class.	2d class.	Theatrical.
Wabash, I. B. & W. and Sandusky	\$16.25	\$15.75	\$13.80
C. & A. L. E. & W., and L. S. & M. S.	16.25	15.75	13.80
From St. Louis to Cleveland :			
Wabash, I. B. & W. & Sandusky	\$13.50	\$12.75	\$11.55
C. & A. L. E. & W., and L. S. & M. S.	13.50	12.75	11.55

The differential fares above quoted will take effect from date of this meeting.

The fares quoted from St. Louis to Buffalo and Cleveland are operative for east bound business only.

The Lake Erie & Western Railroad made application for differential fares from St. Louis to local points on the lines east of Buffalo, which were not allowed, inasmuch as it was not considered advisable to extend such fares to interior points east of the western termini of the Trunk Lines.

IV.—DIFFERENTIAL FARES OVER THE NEW YORK, CHICAGO & ST. LOUIS RAILROAD.

Application having been made by the Indianapolis and St. Louis Railway for differential fares, in connection with the New York, Chicago & St. Louis Railroad, after discussion, it was decided that, inasmuch as the New York, Chicago & St. Louis Railroad is not fully prepared for through passenger traffic, action upon this question should be postponed.

V.—DIVISION OF PASSENGER TRAFFIC BETWEEN DIFFERENTIAL FAIR POINTS.

The division of passenger traffic between differential fare points, between the several lines, was taken up and discussed. The recommendations made by the commissioner on the first and second days of the meeting were reconsidered and modified in some particulars.

VI.—PLAN FOR SETTLEMENT OF BALANCES ARISING FROM THE DIVISION OF PASSENGER TRAFFIC.

After a lengthy discussion, having in view a plan for the division of passenger traffic, the following resolution was unanimously adopted:

"Resolved, First.—That the members of this Committee submit to their managing officers the division of passenger traffic recommended by the Chairman between the various differential points considered by this Committee, as shown in Passenger Statement No. 4, and inform the chairman of their approval or disapproval; and, in case of disapproval, the division is to be submitted to the Arbitrator for final decision, in accordance with the established rules of the Joint Executive Committee.

"Second.—That this Committee also further submit to their managing officers a recommendation that monthly

money settlements be made in accordance with the divisions recommended by the chairman, or to be finally determined by the Arbitrator, such monthly settlements to commence as of September 1, 1882.

"Third.—That said divisions remain in force, and money settlements be made up to the first day of March, 1883; and that, prior to that date, the Chairman shall call a meeting of this Committee for the purpose of readjusting the division of percentages prior to March first, and modifying, if thought necessary, the plans for settlement of balances.

"Fourth.—It is the sense of this meeting that, as far as practicable, the actual division of traffic shall be made by adjustment of differential fares, and that should it be shown that the balances accruing under the present division are larger than is desirable, then any one of the interested parties can ask for a readjustment of the differential fares.

"Fifth.—It is further understood that the object of the money settlements is simply to secure to each company the carriage of the number of passengers assigned to it according to the established division, and that the money settlements shall not be final except by consent of the parties interested; but that the differential fares shall be so adjusted as to secure to each road the carrying of its share of the traffic.

"Sixth.—That we recommend to our managing officers that the contract already agreed upon and signed by a number of the western roads, at the meeting of the Joint Executive Committee on May 24, 1882, for the division of the passenger earnings of said roads, be so modified as to apply for the present only to the division of the passenger earnings between the differential fare points, as at present established, for six months from Sept. 1, 1882."

VII.—MODIFICATION OF THE CONTRACT FOR DIVISION OF PASSENGER EARNINGS, AGREED UPON BETWEEN WESTERN ROADS ON MAY 24, 1882.

The contract for the division of total passenger earnings, including local and through traffic, signed by a number of the Western roads, May 24, 1882, was then read and modified so as to apply only to the division of the passenger earnings between differential fare points, as contemplated by the foregoing resolution.

Said modified contract will be separately printed and submitted to the members of the committee for further consideration.

VIII.—ADVERTISING DIFFERENTIAL FARES.

It was the opinion of the committee that the differential fares established should be advertised, so as to enable the routes to which they are awarded to obtain their proportion of business. After discussion, the following action was decided upon:

"Whereas, This Committee recognizes the importance of advertising differential fares now in effect, and in order to secure uniformity in said advertisements, as well as to confine them within the rules of the Committee, it is hereby

"Resolved, That all matter advertising differential fares shall be submitted to the local committees for their approval; and in case of disagreement the question shall be submitted to the Chairman of the Joint Executive Committee; and no advertisements shall be distributed until they have received the approval of the local committees, or, in case of failure, the approval of the Chairman of the Joint Executive Committee. It is further agreed that no mention shall be made of differential fares in newspaper advertisements."

IX.—DIFFERENTIAL FARES, CHICAGO TO NEW YORK, VIA MICHIGAN CENTRAL, CANADA SOUTHERN AND NEW YORK, LAKE ERIE WESTERN RAILROADS.

The application of Mr. W. H. Hurlburt, General Passenger Agent, that the differential fares between Chicago and New York via Michigan Central, Canada Southern and New York, Lake Erie & Western Railroads be reduced, as originally agreed upon, to \$18.50, was adopted.

Adjourned subject to call.

R. T. BRYDON, Secretary. ALBERT FINK, Chairman.

English and American Passenger Cars.

Mr. R. A. Proctor, the astronomer and lecturer, who has traveled extensively in both countries, writes as follows to an English paper called *Knowledge*, of the relative merits of passenger cars on both sides of the water :

Every one who has traveled much both in Europe and in America, will agree with Mr. Sala's remark that "our present locked-in, boxed-up, stuffy, and narrow compartments are absurd, dangerous, and scandalous to us as a nation." Because when railway traveling was first introduced stage coaches were in fashion, the idea which a slow railway projector naturally formed was to make a train consist of a number of rather large stage coaches; and this arrangement which was feeble-minded enough then, has remained in vogue for more than half a century.

Let me briefly enumerate a few of the advantages of the American system, and then I will touch on their more or less imaginary disadvantages :

First, you can get on board an American train or leave it when the train is moving pretty fast in perfect safety. I have run after a train and got in the rear car (with a helping hand from a brakeman) when it had attained a rate of certainly 12 miles an hour. I have never left one traveling at that rate; but by the rear car it could be done safely enough—at no worse expense than a sprawl.

Secondly, when on board you can choose any car or any part of any car to sit in; you can go to the smoking car, if you want to; or, if you like, you can visit the baggage van to see that your luggage is safe—all when the train is at full speed. I have walked the whole length of a train with both hands occupied by suitcases, etc., stopping only when opening and shutting the car doors.

Thirdly, if pressed for time, you can, in nearly all parts of America, go on board without a ticket, and obtain one at the first visit of the conductor.

Fourthly, tickets are attended to while the train is traveling. There is no absurd stoppage at the last station but one and proclamation of "All tickets ready!" but, without delay of any sort, all tickets are collected *en route*.

Fifthly, the travelers by the train form a single community, with a force of conductors, brakemen, porters, and luggage-men, so that if a disorderly or drunken person gets on board he must behave himself, at the risk of being turned off the train (in bad cases while the train is moving pretty fast, so that his exit is hasty and undignified, yet not unpleasing to those he had thought to annoy).

Sixthly, you generally travel in much more real privacy and comfort than in an English first-class carriage not secured by a lawless fee to the guard. I used to find quite a rest in my railway journeys between lectures in America, with a little two seat compartment to myself, all the passengers sitting in similar compartments facing one way; I could read or reflect undisturbed. Who can say quite as much of an English first-class carriage, if there are two or three passengers in the opposite seats. It is true that part of this arises from the "stony British stare," which foreigners and Americans find so strange and so unpleasant. But "fix it

how you will," you can never feel quite so much at ease facing several persons as when all face the same way. On one very special occasion, in America, when I had to travel in an ordinary car for several hours under circumstances which would have made staring excusable enough (not to make a mystery where there need be none, I was one of a wedding party of two), I was struck with the careful courtesy with which a two seat compartment seemed to be regarded as if it were a private sitting room. I never more thoroughly recognized the innate courtesy of all Americans toward ladies than I did on that occasion. Of course, when traveling in an American car a man may be addressed by a fellow passenger more freely than in England, but it is easy to answer pleasantly and, if the conversation wearis, either to close it or seek another place.

Seventhly, all the carriages are well warmed, and warmed quite safely. I speak without any prejudice in favor of car stoves; for in a railway accident in Missouri I made a much more intimate acquaintance with one than I cared for, and shall carry the marks of the encounter to the grave. But one cannot expect stoves to behave well when the car they are intended to warm is pitched over an embankment thirty feet high. Under all the usual conditions of travel they are perfectly safe traveling companions, and many a time and oft I have missed them when traveling in an English first-class carriage despite wraps and the abomination known as a foot-warmer.

Eighthly, in all cars there is a retiring room; in nearly all there is a supply of drinking water; and in many there are conveniences for washing, brushing, etc. If American trains only consumed their own smoke, they would be perfection; as it is, there is a very serious drawback to American railway traveling in hot weather. To reach your journey's end with collar, cuffs and shirt-front, which had been clean a few hours earlier, reduced to smoke-stained, cinder-dust strewn clothes, is not a pleasant experience. The fault is one which might be easily corrected.

Comparative Speeds of the Fastest Trains in Europe and America.

[Paper read before the E. M. E. Society of the Massachusetts Institute of Technology, Dec. 5, 1882, by A. L. Lothrop.]

I shall first consider American trains, taking into account the acceleration which has occurred within the last few years. For England, my data are brought down to 1880, and on the Continent it is as old as 1878; but, generally speaking, the figures are sufficiently accurate to-day to admit of comparisons.

AMERICA.

The fastest trains in the United States are in the East, and are those between Jersey City and Philadelphia, Boston and New York, and one from New York to Albany. In selecting representative trains, I have given preference to those which maintain the highest speed for the longest time. Probably the fast train in this country, and one which is little below the speed of the fastest English train for the same distance, is the Philadelphia express, on the Pennsylvania Railroad, which leaves Jersey City at 4:30 p. m. and makes the run of 88.4 miles in 1 hour 52 minutes, including three stops, or at the rate of 47.8 miles per hour. Jersey City to Germantown Junction, 84.2 miles, is run in 1 hour 41 minutes, including one stop, or 50.5 miles per hour. I timed last winter the fastest train east, whose schedule time is 1 hour 59 minutes. It was then, however, 6 minutes late, and as it was bullet-timed "on time," perhaps it seldom does better. The train consisted of six cars, one of them a Pullman. A stop was made at Germantown Junction, and it was some time before a high speed was attained. The fastest 5 miles were run in 63 seconds each, or 57 miles per hour; 21 miles were made in 25% minutes, or 49 miles per hour. The 84.2 miles from Germantown Junction to Jersey City were run in 1 hour 52% minutes = 45 miles per hour, including slackening through several towns. It may here be said that the Pennsylvania road bed equals that of any foreign road I have seen, while the freedom of the train from oscillation and vibration was remarkable. This train used to run in five minutes less time, and the fast train west was two minutes quicker when started a few years ago, so perhaps it was found impossible to maintain these higher speeds.

The Bound Brook route of the Philadelphia & Reading Railroad has a train from Philadelphia to Jersey City, 89.4 miles, in 1 hour 57 minutes, including five stops, or 45.8 miles per hour. Wayne Junction to Jersey City, 85.1 miles, is run in 1 hour 47 minutes, including three stops, which is 47.7 miles per hour.

The 4:30 p. m. train from New York to Boston via Springfield, is the fastest between the two cities, taking 6 hours 3 minutes for the 284 miles. I timed the train last September when it was on time. The engines were of the ordinary type, with about 5 ft. 6 in. drivers, and the train consisted of six cars, two of them being parlor cars. On the New Haven Division, the fastest runs were 1.90 miles in two minutes = 57 miles per hour; 1.73 miles in 1 minute 55 seconds = 54.5, and 3 miles in 3 minutes 15 seconds = 53 miles per hour. Owing to the Connecticut law requiring a stop at every drawbridge, the time for the 73½ miles between New York and New Haven, including six stops, was 1 hour 54% minutes, or only 38.5 miles per hour. The 62 miles between New Haven and Hartford were made in 1 hour 30% minutes, including two stops, or 41.5 miles per hour; average speed while running, 43.8 miles per hour. On the Boston & Albany, 96 miles (Springfield to junction of Belknap Branch, Boston) were run in 2 hours 20% minutes, including three stops, or 41 miles per hour; running speed, 43.2 miles per hour, excluding stops. The time for the trip of 284 miles was 5 hours 30 minutes, and the speed 42.5 miles per hour.

The Shore Line express makes its run to Stonington, 93 miles, in 2 hours 1 minute including a stop at Providence, or over 46 miles per hour. As long ago as 1878 the *Railroad Gazette* said: "For over two years a daily train has been run over the 43½ miles between Boston and Providence in one hour, including a dead stop at the crossing, a 6-mile grade over Sharon Hill of 35 ft. to the mile, a slowing up at Mansfield, and through Pawtucket, over a mile, and a slackening over three bridges. The engines have 5½ ft. drivers and 17 in. cylinders. The train is a baggage and smoker, and there are sometimes four 24-ton passenger and a 32-ton Pullman." In February, 1881, I timed this train as follows: Left crossing 1:30 p. m. Beyond Foxboro' the speed was a mile in 63 seconds, or 57 miles per hour; 2.48 miles were run in 2 minutes 40 seconds = 55.5 miles per hour. Before reaching Pawtucket, 14.9 miles had been run in 17½ minutes = 54.5 miles per hour. Providence was reached at 1:50 p. m. = 45 miles per hour. From the crossing the speed was 47 miles per hour. Last June this train was quickened beyond Providence as above.

The fastest train on the New York Central Railroad is the Chicago & Lake Shore special, which runs to Albany, 140 miles, without a stop, at the rate of 49.5 miles per hour. The first 58½ miles are made in 1 hour 28 minutes. These figures should, I think, be sufficient to show that regular trains in this country seldom run a mile in 60 seconds. The fast train which I have made here was on the New York & New England Railroad the other day, when, on a down grade beyond Bolton Notch, 4 miles were covered

In 4 minutes 10 seconds, or 58 miles per hour. In England I have been faster, and it is said, on authority, that it is not uncommon for English express trains to make 60 or 70 miles per hour when running on their schedule time. It has been said that it is impossible for an engine with a 5½ ft. driver to make a mile in a minute. Mr. Le Van gives the greatest piston speed as about 1,200 ft. per minute, which would give about 59 miles per hour with such a wheel. On the Pennsylvania the fast train engines had two pair of drivers 68 in. in diameter and had to make 300 revolutions to make a mile a minute. Coupled drivers are said to be dangerous at high speeds from the liability of the parallel-rods to break, and such accidents have recently happened. Still, in late years, large coupled wheels have been much used on English and continental express engines.

When in Europe during 1877-78, I looked up the fastest trains in the several countries, and as I traveled by some of them I further noted their maximum speeds. A few general remarks about European railways may be interesting. The Continental railways are partly controlled by the governments. They are well built, with curves of large radius. Instead of cars there are carriages, divided into compartments holding six or eight persons. They do not, as a rule, have bogie trucks, but their small wheel-base enables them

Paris to Bordeaux, where 359 miles are run in 9 hours 10 minutes, including 17 stops, an average of over 39 miles per hour. Allowance being made for these, the average running speed is 42.5 miles per hour. I do not think this performance is surpassed in America. From Paris to Marseilles is 536 miles, which used to be covered in 15 hours 25 minutes, at the rate of 34.8 miles per hour, including 13 stops made. The time has since been reduced to 15 hours only.

The expresses on the Northern Railroad run from Calais to Paris, 184½ miles, at 36.7 miles per hour, including seven stops, or at over 39 miles per hour, while running. A run of 27 miles is made at the rate of 45.5 miles per hour. I traveled by one of these trains and found the oscillation of the short carriages tremendous.

On the Eastern Railroad, the schedule time for a run of 47½ miles, is 1 hour 5 minutes, and on the Western Railroad, I timed the express from Paris to Dieppe, running at its usual rate of speed, 16½ miles in 20 minutes 20 seconds, or 47.7 miles per hour.

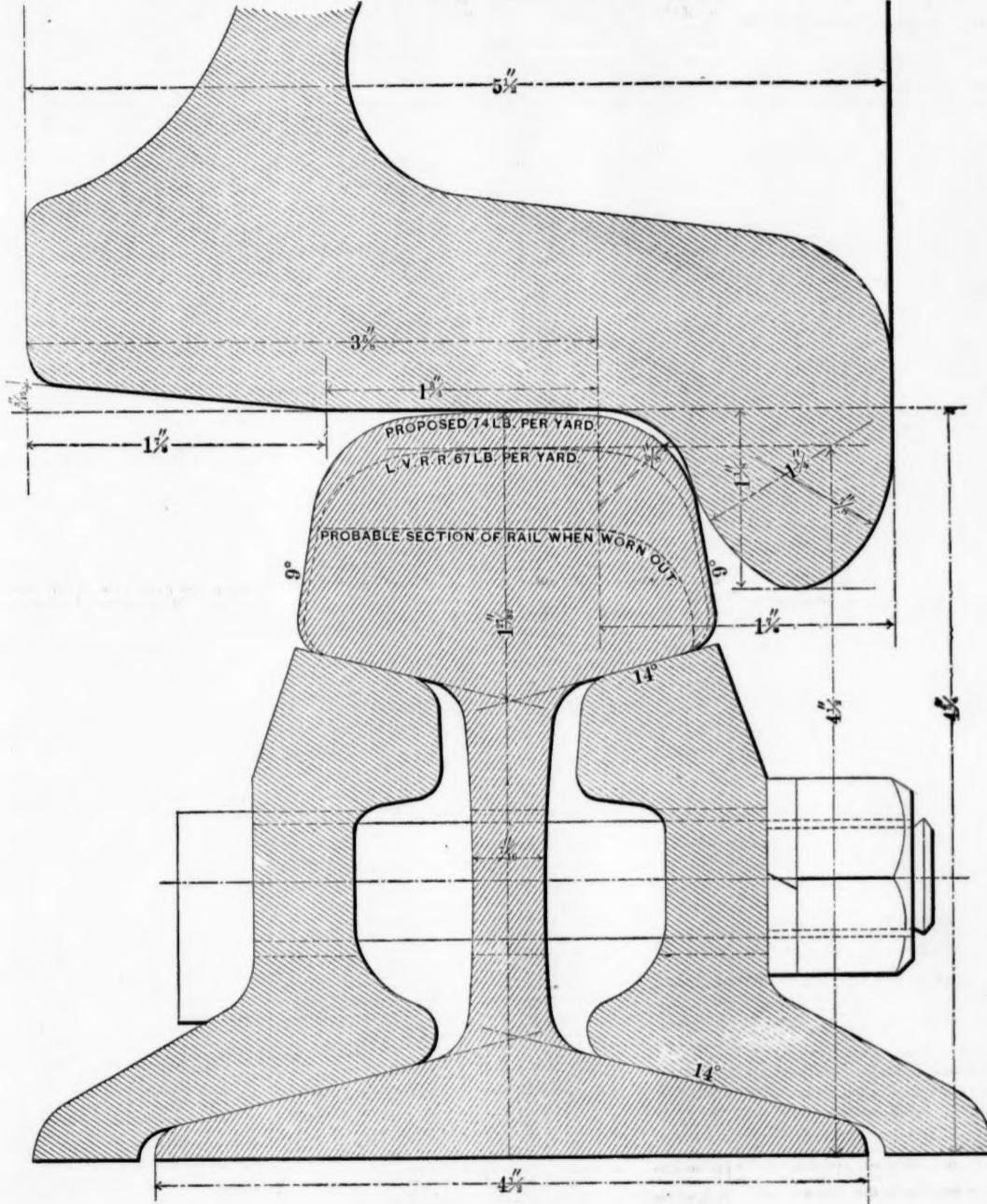
Germany.—Taking Germany and Austro-Hungary together, the fastest trains are found in North Germany. Undoubtedly the fastest train is from Berlin to Hanover, on the Magdeburg-Halberstadt Railroad, 158½ miles in 3 hours, 48 minutes, including three stops = 41.7 miles per

The "Flying Scotchman" (via the Great Northern) runs to Edinburgh, 397 miles, in 9½ hours, including stoppages, at nearly 42 miles per hour.

The Great Western has a 7 ft. gauge, and formerly its express went from London to Bristol, 118½ miles, in 2 hours = 59 miles per hour. This train, known as the "Flying Dutchman," is still perhaps the fastest train in the world, though its speed has been much reduced. The 115½ miles are now made in 2 hours 36 minutes = 45.3 miles per hour, including two stops amounting to 11 minutes. Excluding these the speed is 49 miles per hour. London to Exeter, 194 miles in 4½ hours, exclusive of 20 minute halt on the way, is 49.5 miles per hour. London to Swindon, without stopping, 77½ miles in 1 hour 27 minutes, is 58.3 miles per hour.

The Leeds summer expresses on the Great Northern make the 1-6½ miles in 3½ hours = 49.4 miles per hour, including two stops amounting to 8 minutes. London to Grantham, 105½ miles, in 2 hours 2 minutes = 51.7 and Grantham to Wakefield, 70½ miles, in 1 hour 17 minutes = 54.7 miles per hour. This last is claimed to be the fastest run in the world.

My timing of the Scotch express, the fastest train from London on the Northwestern Railway, may be interesting. Before



Designed by ROBERT H. SAYRE, for the Lehigh Valley Railroad.

Rail, 74 lbs. per yard.

to pass round the curves. There are three or four classes of passengers. Generally, first and second class are carried by the express trains, but in France only first class are taken, and a higher fare charged. The locomotives often have only a single pair of drivers, 7 ft. or so in diameter. In England 6½ ft. driving-wheels are quite as common as 5½ ft. with us, and some engines on the Great Western and Great Northern railways have wheels 8 ft. or 9 ft. in diameter. There is much dispute as to the merits of single vs. coupled engines, but I noticed at the last Paris Exposition that all the French express engines shown had their driving-wheels coupled. Many of the modern engines have cabs and bogie trucks in front. Distances are given on the Continent in kilometeres (0.62 mile each), which have been converted into miles for the sake of comparison here.

In Switzerland and Russia there are no trains exceeding 27 miles per hour, which are therefore not considered. In Belgium, trains travel as fast as 42 miles per hour, but these are generally through trains between France and Germany, and may therefore be classed with the trains of those countries.

Italy.—The only fast train is the mail, which makes the long run from Bologna to Brindisi, 472 miles, in 14 hours 55 minutes, which, including three stops, is 31.5 miles per hour. This train is largely due to English enterprise. It carries the English mails and takes only through passengers.

France.—Many of the French expresses are fast. I believe the fastest long-distance run is on the Orleans line, from

hour. Deducting these, the speed is 44.2 miles per hour. This beats the fast train from New York to Albany, which is the fastest train in America for that distance. A run of 93½ miles is made by the German train in 2 hours 8 minutes = 44 miles per hour. I timed the part from Berlin to Stendal. Some miles were run at 52 miles per hour, 62½ miles were done in 1 hour 30 minutes, including a stop. Berlin to Cologne by this route is 363 miles, accomplished in 9 hours 41 minutes = 37.5 miles per hour.

On the Berlin-Potsdam-Magdeburg Railroad the fast express I have timed 24¾ miles in 30 minutes = 48.7 miles per hour and 50 miles in 1 hour 9 minutes = 43.5 miles per hour. This forms part of the through line between Berlin and Paris, and is, perhaps, the best example of a very long run abroad. The distance is 638 miles, done in about 22½ hours, or at the rate of about 30 miles per hour, notwithstanding the fact that three countries are traversed with attendant custom-house formalities at the frontiers.

Thus it will be seen that the speeds of the fastest Continental trains about equal our own, except in the case noted. For very long runs nothing there equals the speed of the New York-Chicago trains, which average some 35 miles per hour for over 900 miles.

England.—In England, however, we are beaten both in number and speed of fast trains. Mr. Le Van says the average speeds are 20 per cent. greater and the loads 25 per cent. less. Where there are so many rival trains running at nearly the same speeds, it is difficult to name the fastest.

reaching Rugby, 76½ miles had been traversed in 1 hour 35½ minutes = 48 miles per hour. Crewe, 158 miles, was reacted in 3 hours 39 minutes (beating the best Continental time for that distance), and Liverpool, 202 miles, in 5 hours, including six stops, = 45 miles per hour.

A few miles were run in 61 seconds, which is at the rate of 59 miles per hour.

If the speed of American trains continues to improve during the next few years as much as it has recently, we may soon hope to outstrip England, where the maximum has been apparently reached. In fact Mr. Le Van has prophesied that within five years the distance from Philadelphia to Jersey City will be accomplished in one hour, but this seems rather too much to expect, especially on a road running through such a populous district.

Sayre's New Pattern Rail.

The engraving which we give with this article represents the new rail section which Mr. Robert H. Sayre designed while General Superintendent of the Lehigh Valley Railroad. It is ¼ in. higher than the section which he formerly used and which was illustrated in the *Railroad Gazette* of Oct. 7, of last year. The old one weighed from 66 to 67 lbs. per yard, whereas the new weighs 74 lbs. The reasons

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which led him to adopt the proportions of the new sections are stated as follows by Mr. Sayre:

"The new section of the rail is similar in all respects to the 67-lb. rails designed by me and now in use upon the Lehigh Valley Railroad, except that it is $\frac{1}{4}$ in. higher and weighs about 74 lbs. per yard.

"It will be seen that as the base, stem and a certain portion of the head of the rail are not worn out, but that after wearing down say $\frac{1}{2}$ in. of the head of the rail is renewed for want of sufficient strength, any increase in weight put in the head would add materially to the life and value of the rail much more than the increased cost.

"Assuming that the 67-lb. section may be worn down $\frac{3}{4}$ in., as indicated by blue (dotted) line, we shall have $\frac{3}{4}$ in. to wear down in the 74-lb. rail; this gives us just 50 per cent. more wearing value for about 10% per cent. more weight of rail or cost.

"Taking a road whose business would wear the 67-lb. rail $\frac{1}{2}$ in. in 10 years, the 74-lb. rail would wear with same traffic 15 years, and the comparative cost would be 67-lb. rail 16.2 tons per mile @ \$15 \$4,728.50

67-lb. rail 10.3 tons per mile @ \$15.	\$4,738.50
74 " " 116.3 " @ 45.	5,233.50

Then leaving out of the calculation the value of the worn-out rails, which would be the same at the end of the respective periods, we have:

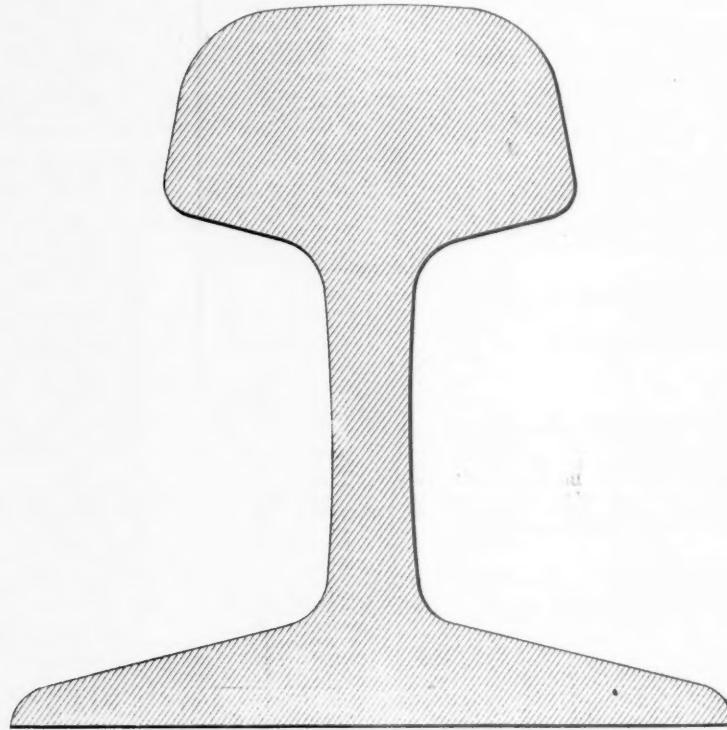
\$4,738.50 + 10 =	\$473.85 per annum
5,233.50 + 15 =	\$248.90
Add annual interest on the excess of original amount	20.70

A saving of \$95.25 per mile per annum.

"In addition to this saving, the width of the top of head

chine, the one set of the form shown in the engraving, and the other set with a cone of $\frac{1}{8}$ in. on a side, or $\frac{3}{4}$ in. in the diameter of the wheel and the length of the tread. These wheels were placed under two eight-wheeled coal cars, the coned wheels under one and the cylindrical wheels under the other. On about an eighth of a mile of track the rails were painted white, and the car with cylindrical wheels was started by an engine so as to run at a speed of 10 or 15 miles an hour over the painted rails. On examining the rails after the car had run over them, there was little or no indication that the wheel flanges had touched the rails. The car with coned wheels was then run over the painted rails in the same way. On examination it was plain that the wheel flanges had come in contact with the rails at frequent intervals, and that there was considerable oscillation to the movement of the car. The inference of all those who saw the experiments was that the motion of the car with cylindrical wheels was much steadier than that of the one with the coned wheels.

What was also worthy of note was the fact that the surface of actual contact of both kinds of wheels on the rail's as marked on the paint was not more than about $\frac{1}{3}$ in. wide, showing the pressure per square inch must be very great. There can be no doubt that the use of cylindrical wheels is rapidly growing in form, and it seems probable that they will soon displace the old-fashioned conical wheels.



Southern Central Railroad

RAIL OF THE SAYRE PATTERN

60 lbs per yard

and the angle of the sides being preserved, the width of the head at the bottom is increased, thus giving additional metal to resist flange wear, and a broader bearing surface for the fish bar.

"In the sketch, the black lines represent a section of rail $4\frac{3}{4}$ in. high weighing 74 lbs. per yard, the dotted lines indicate the section of rail $4\frac{1}{4}$ in. high weighing 67 lbs. per yard, and the probable section of rail when worn out."

The engraving also shows the form of wheel tread which Mr. Sayre adopted, which is cylindrical where it bears on the rail and beveled or coned from the outside of the rail to the edge of the tread. He has concluded, with a number of other persons, that coned wheels are a delusion, and that both rails and wheels will wear better and longer if the bearing of the wheels on the rails is cylindrical than they will when they are conical. Experience thus far has fully sustained that view.

It will be noticed too that the form of the throat of the wheel-tread conforms to that of the corner of the rail. That is, the radius of the curve, $\frac{5}{8}$ in., which forms the one is the same for the other. The consequence is that in going around curves the wheel has a bearing on the whole surface of the corner of the rail, and consequently is not worn nearly so fast as wheels which run on rails having a comparatively sharp corner, and therefore little bearing surface. The rails are rolled somewhat rounding on the top, so as to insure that the wheels will bear in the centre when the rails are first laid. A small amount of wear of wheels and rails will soon cause them to fit each other perfectly.

In the *Railroad Gazette* in which Mr. Sayre's 66-lb. rail was illustrated it was stated that on the Pennsylvania Railroad 40 per cent. of the wheels taken out of service are condemned on account of sharp flanges, whereas on the Lehigh Valley road less than 5 per cent. are removed for that cause. Experience since that time has not increased the percentage on the latter road, and it is attributed chiefly to the fact that the rails fit the wheels.

The fact that the rails hit the wheels.

Some experiments were recently made on the Lehigh Valley Railroad to show the action of cylindrical and conical wheels, which were witnessed by the President and Secretary of the Master Car-Builders' Association. Two sets of cast-iron wheels were turned up in an emery grinding machine

Exhibition of Electric Engineering

EXHIBITION OF ELECTRIC ENGINEERING.
At the last meeting of the Engineers' Club of Philadelphia the Secretary suggested that the Club should consider the feasibility of an exhibition in Philadelphia, under its auspices, of the progress and products of modern electric engineering. After discussion the question was, upon motion of Prof. Haunt referred to the board of directors.

ANNUAL REPORTS

The following is an index to the annual reports of railroad companies which have been reviewed in previous numbers of the present volume of the *Railroad Gazette*:

The taxes for last year were \$85,825 greater than in

1880-81, making the decrease in other expenses \$152,949.
The result of the year was as follows:
Net earnings, as above..... \$2,189,382.67
Interest..... \$561,450
Rentals..... 75,000
Dividends, 8 per cent..... 1,503,550
2,145,000.00

Balance, surplus for the year..... \$44,382.67
Surplus, Sept. 30, 1881..... 2,588,538.91
Total surplus, Sept. 30, 1882..... \$2,632,921.58

The loss on tonnage is owing to the failure of the crops and the high prices of grain in the markets of the West, which prevented a free movement of cereals for export. The loss in rate on through freight, the report explains at some length, was due to the trunk line war of rates that raged so furiously, and concludes by saying: "With good crops in the West, a prospect of a fair export traffic in cereals, and the trunk lines at peace, we may reasonably look for a fairly remunerative business with the West the present season."

The expenditures on account of the third and fourth tracks between Boston and Charles River, together with the cost of new buildings and extensions, amounting to \$300,548.57, have been charged to the operating expenses of the year. There were built, in the shops of the company, 7 locomotives, 277 merchandise cars of various kinds, 3 drawing-room, 12 passenger and 2 mail cars. The cost is charged to repairs of locomotives and cars. The track, rolling stock and buildings are in good condition. The trustees of the improvement fund have received \$53,680.34 from the securities held by them. This amount has been placed to the credit of premium, which now stands debited with \$23,234.18.

Referring to the former relation of the state to the road, the report says: "The year is specially marked by the retirement of the state from participation in the management of the company's affairs. The Governor, in his annual address to the Legislature of 1882, laid down the principle that the state ought to be separated from railway partnerships. Following his recommendation, an act was passed authorizing the exchange of the stock of this company held by the state for 5 per cent. bonds, payable in 20 years from date at the rate of \$160 for each share owned by the commonwealth. The act provided further that, after the assignment of the state's stock to the company, the commonwealth should no longer have any representation in the board of directors. A meeting of stockholders was called to see if they would accept the act. Many present were not prepared to vote, and the meeting was adjourned for two weeks. At the adjourned meeting 89,533 votes were cast, 56,733 in the affirmative, 32,870 in the negative, a clear majority of 24,013 in favor of the exchange. In accordance with the vote of the shareholders, the Treasurer made the exchange of bonds for the state's stock Aug. 18; and since then the commonwealth has not been represented in the board."

Evansville & Terre Haute.

This company works a main line from Evansville, Ind., to Terre Haute, 109 miles, with a branch from Owensville by Cynthiana to Mt. Vernon, 37 miles, making 146 miles in all. During the past year the branch was extended from Cynthiana to Mt. Vernon, 23 miles. The report is for the year ending Aug. 31.

The equipment consists of 24 locomotives; 9 passenger, 2 combination and 6 baggage, mail and express cars; 620 box, 40 stock, 160 flat, 75 coal and 9 caboose cars; 1 pay-car; 1 tool car; 15 construction and 37 hand cars.

The capital account is as follows, condensed:

Stock (including \$2,316 scrip).....	\$3,000,000.00
Bonded debt.....	3,000,000.00
Bills accounts and balances.....	170,522.75
Income account.....	290,860.91
Total.....	\$6,461,383.66
Construction and property accounts.....	\$6,132,685.04
Stocks.....	8,000.00
Accounts and balances.....	217,982.54
Materials.....	52,807.91
Cash.....	19,907.27
	6,461,383.66

The bonded debt consists of \$892,000 old first-mortgage bonds, \$30,000 consolidated bonds and \$2,078,000 first-consolidated bonds.

The traffic for the year was as follows:

Car mileage: 1881-82.....	1880-81.....	Inc. or Dec. P.c.
Pass-train cars..... 917,840	I. 1,095,895	44.2
Freight cars..... 6,223,237	4,317,342	I. 1,905,895
Service cars..... 180,819		

Total.....	7,321,896
Passengers carried.....	2,25,142
Passenger-miles.....	7,781,101
Tons freight carried.....	6,703,255
Ton-miles.....	47,480,847
Av. receipt:	
Per pass-mile.....	2.80 cts.
Per ton-mile.....	1.14 "

Of the freight car mileage 68.5 per cent. was of loaded cars. The average passenger journey was 30½ miles; the average freight haul, 84 miles.

The earnings for the year were as follows:

1881-82.....	1880-81.....	Inc. or Dec. P.c.
Freight..... \$543,110	\$441,685	I. \$101,424
Passengers..... 208,380	201,309	I. 7,290
Mail, etc..... 74,920	50,270	I. 15,650
Total..... \$826,428	\$702,054	I. \$124,374
Expenses..... 451,616	480,588	D. 34,942

Net earnings.....	\$374,782	\$215,466
Gross earn. per mile.....	6.61	5.82
Net.....	2,998	1,781
Per cent. of exps.....	54.65	68.31

Expenses include taxes, which were \$17,870 last year, against \$16,840 the previous year.

The income account, condensed, is as follows:

Net earnings as above.....	\$374,781.06
Interest on bonds.....	\$188,020
Dividend, 2 per cent.....	50,000

Balance.....	\$135,861.96
Surplus, Sept. 1, 1881.....	154,998.95

Surplus, Sept. 1, 1882.....	\$290,860.91
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During the year 16 miles of steel rails and a large number of new ties were laid. All of the main line but five miles is now laid with steel. Some orders for freight cars have been given, and two freight engines are under contract. The shops of the company are to build six passenger cars and several baggage and express cars.

A handsome new passenger station has been built in Evansville. New stations are needed at Terre Haute and Fort Branch.

The extension of the branch line to Mt. Vernon was completed July 1 last, at a cost of \$240,951. The company will receive this year and next \$65,000 for taxes voted as a bonus for this branch.

Richmond & West Point Terminal Co.

The report of the President of this company, as presented at the recent annual meeting, gives a brief general description of the various railroad properties owned and controlled by the company, and in conclusion says: "The gross earnings of the roads controlled by your company for the months of October and November show an increase of 22 per cent., thus realizing, to a certain extent, the anticipations of largely increased business. It will be gratifying to the stockholders to learn that during these two months the net earnings, over ordinary operating expenses, have increased over 43 per cent. over the same period of last year, showing that the large expenditures made in improving the properties during the year have rendered practicable the handling of the larger business with greater economy, thus demonstrating the increased earning power of the roads."

Reports of the Virginia Midland not received for November, and therefore not included.

The General Agent's report gives the total capital stock at \$15,000,000, of which \$5,000,000 was issued at par and \$10,000,000 at 25, making an average of 50, issue price.

Thus the capital stock of the company consists of 150,000 shares, of the par value of \$100 each, and was issued full-paid stock, as authorized by its charter as amended Feb. 21, 1882. Of this the Richmond & Danville Railroad Company owns 75,100 shares, and other stockholders 74,900 shares.

The company has no bonded debt and no fixed charges, its railroads and properties being held by ownership either of all or a majority of the capital stocks of the several companies.

The General Agent's report gives a list of the railroad properties owned, controlled and operated by the Terminal Company, the total mileage being 1,541. The properties include the Virginia Midland, the Western North Carolina, the Charlotte, Columbia & Augusta, the Columbia & Greenville, and the Georgia Pacific, 150 miles of the latter being in operation.

From the General Agent's report we also take the following:

"The present financial status of the company as shown by a summary from the Auditor's statement is as follows:

Cash in treasury, bills receivable, stock subscriptions, amounts due by individuals and companies, and amounts to be returned to the treasury, either in cash or securities, from the construction companies, when the work undertaken by them is completed.....	\$2,674,076.33
Less all indebtedness, including bills payable, indorsed bills, bills rediscounted, deferred payments &c. \$55,461.12	
Less all indebtedness, including bills payable, indorsed bills, bills rediscounted, deferred payments &c. \$55,461.12	
Less all indebtedness, including bills payable, indorsed bills, bills rediscounted, deferred payments &c. \$55,461.12	
Leaving balance unexpended.....	1,877,983.68

Adding expenditures and investments as follows, viz:

Expenses.....	848,70.20
Wharf property, compress, etc.....	11,232.61
Other property, part of construction, etc.....	53,741.13
Stocks, bonds, and securities.....	6,472,263.49

Leaving balance unexpended..... 8,702,997.35

Paid up capital..... \$7,500,000.00

"Inasmuch as the projects of the company are numerous, and several in active operation, it is impossible to state exactly outstanding obligations not yet reported—as, for instance, work done by the American Construction Company upon the Northeastern Railroad, of Georgia, and upon the Richmond & Mecklenburg Railroad. But a full estimate of such amounts to be paid would, in my opinion, not exceed \$47,000, which would leave, after amounts are returned as above, \$750,000 of the capital yet to be invested."

Richmond & Allegheny.

This company purchased the old James River & Kanawha Canal and built a railroad on the canal bed. It now operates the following lines:

Main line, Richmond to Clifton Forge, Va.....	230.31
Lexington Branch, Balcony Falls to Lexington, Va.....	19.38
Leased line, Henrico Railroad, Lorraine to Hungar, Va.....	11.00
Total.....	260.69

There are 25.09 miles of sidings. The telegraph line extends over the whole length of the company's lines, 260.69 miles with 275 miles of wire, and also nine miles of telephone wire. The total length of iron bridging on the line is 2,991 ft. There are 41 station buildings, 28 of which were built last year. There are 14 water tanks and 6 turntables.

The equipment owned is 21 locomotives; 16 passenger, 3 sleeping and 10 baggage, mail and express cars; 192 box, 25 stock, 254 flat and 9 caboose cars; 1 wrecking car.

At the close of the fiscal year, Sept. 30, 1882, the general balance sheet was as follows:

Capital stock.....	\$5,000,000.00
Bonded debt.....	5,996,000.00
Second-mortgage subscription loan.....	1,250,000.00
James River & Kanawha Company lease (not held by trustees).....	36,310.86
Principal of car trusts.....	351,000.00
Bills payable.....	848,759.20
September liabilities.....	104,914.66
Accrued interest.....	111,510.00
Total.....	\$13,698,494.72

Rights of way and franchises..... \$3,446,662.01

Cost of road (construction)..... 5,371,154.02

Richmond docks..... 1,000,843.91

Manchester water-power..... 197,277.50

Real estate..... 16,794.25

Lynchburg dam..... 70,352.75

Equ pments..... 692,266.61

Stocks and bonds..... 187,000.00

Materials..... 29,636.49

Bills receivable and accounts..... 322,655.55

Cash..... 53,441.61

Total..... \$13,698,494.72

The bonded debt consists of \$4,925,000 first-mortgage, 7 per cent. bonds, due 1920; \$974,000 second-mortgage, 5 per cent. bonds, due 1916, and \$97,000 Manchester mortgage, 5 per cent. bonds, due 1911. The yearly interest charge is thus \$408,404, or \$1,584 per mile worked.



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S. WRIGHT DUNNING AND M. N. FORNEY.

EDITORIAL ANNOUNCEMENTS.

Passes.—All persons connected with this paper are forbidden to ask for passes under any circumstances, and we will be thankful to have any act of the kind reported to this office.

Addresses.—Business letters should be addressed and drafts made payable to THE RAILROAD GAZETTE. Communications for the attention of the Editors should be addressed EDITOR RAILROAD GAZETTE.

Contributions.—Subscribers and others will materially assist us in making our news accurate and complete if they will send us early information of events which take place under their observation, such as changes in railroad officers, organizations and changes of companies, the letting, progress and completion of contracts for new works or important improvements of old ones, experiments in the construction of roads and machinery and in their management, particulars as to the business of railroads, and suggestions as to its improvement. Discussions of subject pertaining to ALL DEPARTMENTS of railroad business by men practically acquainted with them are especially desired. Officers will oblige us by forwarding early copies of notices of meetings, elections, appointments, and especially annual reports, some notice of all of which will be published.

Advertisements.—We wish it distinctly understood that we will entertain no proposition to publish anything in this journal for pay, EXCEPT IN THE ADVERTISING COLUMNS. We give in our editorial columns OUR OWN opinions, and those only, and in our news columns present only such matter as we consider interesting and important to our readers. Those who wish to recommend their inventions, machinery, supplies, financial schemes, etc., to our readers can do so fully in our advertising columns, but it is useless to ask us to recommend them editorially, either for money or in consideration of advertising patronage.

BALTIMORE & OHIO REPORT.

In our issue of Nov. 24 we published an abstract of this report for the year ending with September last, which is the same fiscal year as that of the two New York trunk lines. So far as rates and crops and the condition of business were concerned, the three roads were thus exposed to the same influences. The year was one in which for three-fourths of the time west-bound through rates were hardly half as great as the year before; for more than half the year east-bound through rates averaged probably less than half the rates of the previous year; and for a somewhat shorter time through passenger rates were from one-third to three-fourths of the regular rates. And the traffic of the whole year was greatly reduced by the bad crops of nearly all staples in 1881. There was much less wheat and corn in the country to carry than for many years. On the other hand it was a year of great industrial activity. Iron works and other manufactures were very active, many new enterprises were established, and there was an unexampled amount of new construction of buildings and railroads, and production of lumber and coal, which made local traffic unusually heavy.

So far as through business is concerned, it was probably the most unprofitable year the trunk lines have ever had, except, perhaps, 1876-77, which was much like it, but with a much smaller through freight traffic, and a light local traffic. We should therefore expect to find the trunk lines affected about in proportion to their through traffic. Or, rather, the roads with heaviest through traffic should show large losses under that head, and those with large coal and iron traffic should show large gains.

So far we have reports from the Erie and the Baltimore & Ohio.* Both of these roads have a very heavy coal traffic; the Baltimore & Ohio has on its Pittsburgh line also a heavy traffic to and from iron works. The Erie probably has more than double the Baltimore & Ohio's through freight traffic and probably more than twice as much passenger traffic. On both of these roads, then, there was a growing profitable traffic to set against the unprofitable through traffic. On the Pennsylvania the coal and iron traffic is greater than on the other roads, and though its through traffic is probably two and a half times as great as the Baltimore & Ohio's, we should expect its gains from the increase of other traffic to be greater in proportion than on the other roads, so that though its losses by the railroad war were greater than those of the other two roads, its gains on other traffic at the same time would be so much greater than theirs, that in the aggregate it would suffer less than either;

though as there was a very great expansion of the coal and local traffic on the Erie at the same time, we may easily be mistaken in this, and as it does not report for the year ending with September, we cannot ascertain exactly. The New York Central, having a much larger through traffic than any other road, must have suffered most from the railroad war. It has also more ordinary local traffic, but has comparatively a trifling coal and iron traffic, which was the traffic which grew fastest during the year under consideration. It is not probable that the industries which prevail on the line of the New York Central expanded as much as those which prevail on the Pennsylvania, for instance, though there was great activity in them. Therefore we should expect smaller gains from local traffic on this road to set against its larger losses from through traffic, and to find that its accounts do not compare as well with those of the previous year as those of the other trunk lines.

But to return to the Baltimore & Ohio, its reports of traffic are so imperfect that we can hardly make any direct comparison of it with that of the other lines, and none at all of cost of doing it per ton or passenger per mile or per train mile. Nor can we with anything like accuracy compare its own traffic for different years. It gives only the quantities carried of certain principal freights, in which a ton counts for as much when hauled ten miles as when hauled the 826 miles from Chicago to Baltimore. These quantities for six years have been reported as follows:

Year.	Carried to Baltimore.					Live stock, tons.
	Flour, bbls.	Wheat, bu.	Corn, bu.	All grain, bu.	Lumber, tons.	
1876-77.....	641,702	2,570,616	13,290,714	12,379,861	53,720	111,920
1877-78.....	778,211	9,365,258	10,184,281	2,6,9,654	41,270	132,462
1878-79.....	1,131,581	18,497,248	10,063,552	20,622,935	47,724	131,431
1879-80.....	598,963	11,000,000	8,144,496	21,975,000	54,720	161,154
1880-81.....	959,583	12,57,339	6,228,87	20,39,834	49,0,3	115,846
1881-82.....	6,7,033	6,539,814	551,719	8,843,249	55,266	80,284

As the Baltimore & Ohio carries nearly all its east-bound through freight to Baltimore, this is a very significant statement. It appears that as a carrier of grain and flour it reached its maximum in 1878-79, and that there has been a continuous decline ever since. In the year named, it delivered at Baltimore flour and grain equivalent to 32,968,109 bushels; in 1879-80, 28,658,160; in 1880-81, 24,647,914; last year, only 11,074,911 bushels.

The great decrease last year was chiefly due to the poor crops—poorer in the country from which the Baltimore & Ohio receives most of its grain than almost anywhere else in the country—and also partly to the indisposition of this road to make efforts to obtain traffic at the rates less than cost which prevailed during the larger part of the time while last year's crops were coming forward. The year, however, includes three months of this crop year, when there was an abundant wheat crop on this company's lines. But the decrease in previous years cannot be accounted for in this way. The largest grain crops of the country were in 1879 and 1880, carried chiefly in the fiscal years of this company ending with September in 1880 and 1881. The aggregate receipts of the five Eastern Atlantic ports were 13 per cent. more in 1879 than in 1878 and 3 per cent. more in 1880 than in 1879; the receipts at New York were 7 per cent. more in 1879 than in 1878, and 34 per cent. more in 1880 than in 1879. But we must not hastily conclude that this decrease in deliveries by the Baltimore & Ohio Railroad denotes the diversion of grain traffic from Baltimore. That has been the case in some years, but these changes have not been so great as in the Baltimore & Ohio deliveries. Thus for five successive calendar years the total Baltimore receipts of flour and grain have been, in bushels:

	1877.	1878.	1879.	1880.	1881.
34,590,303	47,075,240	66,799,926	60,631,426	43,354,247	

As these years end with December we cannot say just what the difference between the total Baltimore receipts and its receipts by the Baltimore & Ohio were, but it is very plain that Baltimore does not depend upon the Baltimore & Ohio alone for its grain receipts. On the whole, for years past it has received nearly as much by other routes as by this road, and chiefly by the Northern Central, whose importance as a carrier to Baltimore has greatly increased of late years, so that sometimes it brings more grain there than the Baltimore & Ohio itself. It will, we believe, be surprising to most to see how the latter company's grain traffic has fallen off of late years, during some of which the total movement was exceptionally large. Last year, we see, it was but about half as large as in 1876-77 even—the year of the great railroad war—and *seventy per cent.* less than in 1878-79. Corn receipts by this road almost ceased last year.

It is noticeable also that the live stock carried by this road last year was less than in any other of the six years, and the only traffic (in this table) showing an increase was lumber.

A showing just the contrary of this is made by the report of the total through freight carried (east and west)

and the coal tonnage, which are given as follows in tons:

	Coal.				
	Main Stem	Main Stem Co.	Pitts. Div.	Trans- Ohio.	Total.
1874-75.....	872,161	1,79,859	45,1,08	.....	9,624,558
1875-76.....	1,093,93	1,196,280	4,9,0,05	.....	2,871,9,9
1876-77.....	1,647,645	1,1,69,5,4	370,8,9	1,138,103	203,4,3
1-77-78.....	1,149,499	1,1,9,357	355,0,0	1,364,61	216,9,8
1878-79.....	1,4,5,6,9	1,213,2	382,702	1,7,86,687	165,7,0
1879-80.....	1,08,247	1,331,891	4,3,2,6	1,821,2,6	3,2,4,4
1880-81.....	2,01,174	1,716,0,07	428,321	1,9,40,102	378,9,7
1881-82.....	3,043,2,7	2,134,0,0	480,0,6	2,447,749	678,0,41
					5,647,016

Thus notwithstanding the decrease in the specified articles of traffic delivered at Baltimore last year, we see that the company reports an increase of 50 per cent., amounting to more than a million of tons, in "through merchandise east and west." We do not see how this can be possible under any ordinary definition of "through" freight. The grain and flour and lumber delivered at Baltimore, and the live stock, not all of which is through, amounted to about 477,000 tons last year, against 879,000 tons the year before—a decrease of 402,000 tons. This includes by far the larger part of the east-bound through traffic. There was doubtless an increase in the west-bound through traffic, as on all roads that year, but the whole of this is comparatively small. The only important traffic in which large gains are reported is coal, and very little of this can be through traffic in the ordinary acceptance of the term. If the shipments from the Cumberland mines to Baltimore and from the Connellsburg mines to Pittsburgh are counted as through traffic, the gain can be accounted for; but in that case the comparisons of the tonnage of "through" traffic from year to year are worthless.

The great growth of the coal traffic of the road is the feature of the year, and indeed of most recent years in the history of the company. This road carries bituminous coal and coke almost exclusively, and like the Pennsylvania it has profited greatly by the extraordinary growth of the iron industry of recent years and the more extended use of coke for smelting. On the Pittsburgh Division the coal and coke shipments last year were 23½ per cent. more than the year before, and 80 per cent. more than in 1877-78, when the revival of the iron industry began. On the Trans-OHIO lines the increase over 1880-81 is no less than 80 per cent., and the gain on the Main Stem in the same year is 21½ per cent. Evidently it was the growth of local traffic and the activity in mining and manufacturing industries that kept this road prosperous last year—that, indeed, offset a large decrease resulting from the great decrease in agricultural traffic and the sweeping reductions in through rates.

So much for the traffic of the Baltimore & Ohio Railroad. We will now examine the course of its gross and net earnings and working expenses, which for the last nine years have been, for the whole system worked:

Year.	Miles.	Gross		Net earnings.
		earnings.	expenses.	
1873-74.....	1,166	\$14,947,090	\$9,461,651	\$5,485,439
1874-75.....	1,314	14,444,239	9,008,655	5,435,574
1875-76.....	1,430	15,031,236	9,609,857	5,421,370
1876-77.....	1,474	13,208,660	8,226,055	4,9,2,805
1877-78.....	1,456	13,705,280	7,769 : 01	5,995,079
1878-79.....	1,449	14,193,981	7,601,596	6,505,393
1879-80.....	1,467	18,317,740	10,330,770	7,986,570
1880-81.....	1,512	18,463,877	11,390,479	7,073,398
1881-82.....	1,512	18,383,870	10,029,214	7,454,662

Thus there was a decrease last year compared with the previous year of \$80,001 (0.4 per cent.) in gross earnings, of \$461,265 (4 per cent.) in working expenses, and an increase of \$881,264 (5.4 per cent.) in net earnings.

It is probably safe to conclude, in view of the great increase in coal shipments, that the traffic last year was much larger than the year before, so that the average rates were much lower. The net earnings fell off \$913,000 (11.4 per cent.) from 1880 to 1881, and the partial recovery made last year was due wholly to a reduction in working expenses. None of the elements of expenses were lower last year, but enormous expenditures had been made on the road for two years previous, and it probably did not require as much for maintenance as in those years. We see that there was an increase in expenses of \$2,639,174 (84 per cent.) from 1879 to 1880, and of \$1,057,759 (10½ per cent.) from 1880 to 1881. After such an increase a decrease in the face of larger traffic and high prices may be quite practicable. There was in this same year a very large increase in the expenses of the Pennsylvania Railroad, but a slight decrease on the Erie. Details of expenses are given only for the "Main Stem and Branches," 590½ miles out of the total of 1,512. By these we find that the saving over the previous year was in maintenance of rolling stock, the expenditures for which was \$2,292,587 in 1880, \$1,835,303 in 1881, and \$1,565,019 in 1882. And the chief part of this reduction has been by the decrease in the number of new freight cars built (to take the place of old ones), which was but 493 last year, against 1,261 in 1881 and 1,690 in 1880. This alone is more than sufficient to account for the decrease of \$236,747 in car maintenance. But though there may have been no need to

* The New York Central report is received since this was written.

build more cars last year, because the old stock was all-sufficient, it remains true that the maintenance was not equal to the average of recent years. The company at the beginning of the year had 15,235 freight cars. The renewal of but 493 of these in a year would be equal to the average wear only if the average life of a car were 32½ years—probably two or three times the actual average life.

The expenditures for maintenance of road and structures were but slightly (5½ per cent.) less than in 1881, and were nearly 30 per cent. more than in 1880.

This company's capital stock is so very small, in comparison with the property owned and controlled, that a small percentage of increase or decrease in net earnings may be equal to a respectable dividend on the stock. The \$5,000,000 of preferred stock, limited to 6 per cent. dividends, has the character of a fixed charge; less than \$150,000 pays 1 per cent. on the common stock. The reduction of \$461,000 in working expenses last year was thus equal to 3 per cent. on the stock, and the surplus carried to credit of profit and loss for the year, after paying two 5 per cent. dividends, was more than 11 per cent. on the stock. A company which earned at the rate of 21 per cent. in that year of railroad war and bad crops must certainly be in a very strong position.

The business of the year was such that the different lines of the system show quite different results compared with the previous year. There was a considerable decrease on the "Main Stem," which is probably chargeable to the through traffic, over-balancing the effect of the large increase in coal; there is a small decrease also on the Chicago Division, whose traffic is mostly through. On the Central Ohio Division there was an increase of 38 per cent., on the Lake Erie Division an increase of 109 per cent., and on the Pittsburgh Division an increase of 37 per cent. in net earnings. The latter, which until very recently did not earn the interest on its debt, is now become one of the most profitable sections of the road, its net earnings per mile having been \$8,863 last year, against \$7,750 on the Main Stem and Branches, and \$7,187 on the Washington Branch. None of the other lines remotely approach these figures, the net earnings of the Central Ohio Division being \$2,300 per mile, of the Lake Erie Division \$2,028, of the Chicago Division \$1,697, and of the Parkersburg Branch \$1,025. The net earnings of the Chicago Division were about \$12,000 more than the interest on the 5 per cent. bonds issued to pay for it.

The aggregate net earnings of the 560 miles of the company's Trans-Ohio lines were but \$210,000 last year, an average of but \$375 per mile. These lines, the Parkersburg Branch and the Pittsburgh Division have absorbed a very large portion of the \$43,900,000 of "surplus" reported by the company. Of these only the Pittsburgh Division is largely profitable as yet, and it has but very recently become so.

RECENT PASSENGER DECISIONS.

Lawsuits for putting a person off the train have been numerous, and a few have arisen out of confining him at a station; but we do not remember to have before met with a suit for abduction by a railroad train. Such a case has lately been decided in Pennsylvania. The plaintiff was a boy of about ten years of age. The story of the case was that a brakeman on a train which was carrying fruit detected a small party of boys in the heinous offense of "hooking" a few peaches from a crate in one of the cars. As such a thing as a brakeman's assuaging the pangs of hunger by a peach or apple from the freight in his charge is never known, this brakeman was gravely impressed with the enormity of the crime. He grabbed one of the culprits, tried him on the spot, sentenced him to solitary imprisonment, and—we now return to the more didactic law report—locked him in a closet in the caboose car. The train soon started, carrying the unlucky prisoner. His cries attracted the conductor's attention, who released him from the closet, and inquired into the case; but on being told the facts, so far sustained the brakeman's act as to order that the boy should be carried to the next stopping place. That reached, he was set at liberty. He returned home, a distance of about five miles, running most of the way, and the alarm, confinement, over exertion and fatigue brought on a fit of sickness, from which he recovered only to find himself crippled for life. Suit was brought in his behalf against the two men individually. Little question seems to have been made that the brakeman was liable, but the claim to hold the conductor chargeable was contested. The jury found that in point of fact he ratified the brakeman's course, and they awarded a verdict of \$1,658 against the two. The Court sustained this, intimating that the conductor should have marked his disapproval

by stopping the train and allowing the boy to leave, on his discovery of the wrong.

It will be observed that no attempt was made to charge the company. Such an action might probably have been successfully resisted on the ground that the misconduct was not committed in the discharge of duty, but was a mere private wrong. Yet the tendency of decision seems to be to render the liability of companies for wrongs done by their servants gradually more stringent; and some courts might take the view that as the acts of the two men had been done in the line of protecting the goods in their charge from pilferers, and as they had used the company's car, placed in their charge to earn a profit for the company, in perpetrating the wrong, the company should be held liable. On many roads judicious instructions as to what shall be done with petty thieves around a station would not be amiss.

As an instance of a tendency to enlarge the liability of companies for torts of employés may be mentioned a recent Illinois case, in which a passenger complained to the conductor as the train was approaching the station to which he was ticketed, that his watch had been stolen from his pocket during the ride. The conductor gave him leave to ride "free" to the next station, to give opportunity for a search. During the search the passenger expressed an opinion that the brakeman had taken the watch, and the brakeman overhearing this retaliated by striking the passenger a severe and injurious blow over the head with his lantern. The passenger's action against the company was defended on two grounds; that he had not the rights of a passenger because he was riding without paying fare; and that the brakeman was not acting in the discharge of any duty. But the Court said that under the circumstances the assent of the conductor to the man's having a free ride was a waiver of fare, and left his rights as a passenger unimpaired; and that one of those rights is to be carried uninjured by violence from employés or even fellow passengers. Companies are not liable for mere personal wrongs committed by employés upon strangers; but they are bound to protect the passengers from such wrongs.

Two decisions are noticed on the right of passengers to have reasonable information and time for leaving the train. In Indiana, a lady passenger riding on a ticket to Plymouth, and unacquainted with the road, asked the conductor when he took up her ticket, "Is the next stopping place Plymouth?" He answered: "Yes." She accordingly left the car at the next stop; but found it to be a flag station several miles from Plymouth. The train had been stopped there unexpectedly, and the conductor had neglected to notify her of the change. It was a cold, stormy night, there was no shelter near, and she suffered much from exposure and fatigue. The Court held that she was entitled to rely on the conductor's statement as to the station, and she recovered \$300 from the company. Theoretically it might well seem that the company had discharged its duty by carrying the passenger safely to his place of destination, and that the responsibility of knowing where he wished to stop should be upon him. But the drift of opinion in the courts, founded more upon usage and the practical needs of the traveling public than on strict theory, is that the companies are bound, through their agents, to furnish reasonable information, and are liable for damages for gross errors or neglect in this regard.

In a Massachusetts case the passenger was ticketed to a flag station; but there was a great crowd, the train was late, and only slowed at the station; and what with the crowd, and his haste, and the movement of the car, the passenger was thrown down and hurt. It is not ordinarily allowable to a passenger to jump from a running train at the company's risk; but the Court held that if in this instance the passenger was misled by insufficient, injudicious arrangements, and came to injury by failure of the company to provide him with a proper opportunity to leave the car, he could recover.

In a Georgia case, as a crowded excursion train drew into Atlanta late one dark night, a resident of that city came to meet it for the purpose of escorting home his wife and child who were among the excursionists. The freight business was so heavy that night that the excursion train was kept waiting at a few rods' distance from the depot platform while freight cars were unloading. Our Atlantan, instead of waiting at the platform for the cars to reach it, walked up the track to the excursion train, boarded one car, and searched through it for his family. They were not there, and he then attempted to alight. But in the meantime the cars had been moved a little, bringing the steps over a deep culvert into which he fell. In the suit for his injuries the Court said that it is probably sound law that a person going to or from the cars as an escort to a lady passenger has all the rights

of a fare-paying passenger, in respect to getting aboard the cars and alighting, yet these rights do not extend to taking or leaving the cars at improper places. Passengers, and still more volunteer escorts, are not to be in a hurry, but are to wait until the cars are at the proper place and the usual signals are given that the time has come for them to step off. One who leaves the cars before the proper place is reached does so at his own risk. The rule is different, as was explained in a late Missouri case, where a conductor or brakeman notifies passengers to leave at an unusual place. A passenger is not in fault who follows directions given him by the persons in charge of the car.

One stealing a ride is not entitled to passenger's rights, yet is not to be abused. This is illustrated by a New York decision in the case of a street boy who climbed upon the steps of a New York Central car for a ride. A brakeman kicked him off, while the car was running, and he recovered damages against the company notwithstanding the objections that he was a trespasser and that kicking him was outside the brakeman's duty. The Court said that he might have been put off, but that it ought to have been done in a way to avoid doing him any unnecessary injury; that putting improper persons off the train is one of the duties of train hands, and the company is responsible for the manner in which they perform it.

Somewhat connected with this general subject are two decisions upon rights of passengers who choose to ride upon the platforms of street railroad cars. In one of the cases the passenger rode upon the platform because he wished to smoke, and by the tacit permission of conductor and driver; in the other the car ran off the track, and he in common with other passengers got out at request of the driver, and was hurt while standing on the platform as the car started. In both cases the immediate cause of the casualty was unskillfulness of the driver, and the passenger was not in fault otherwise than that if he had not been upon the platform, but had been inside, he would not have suffered. In both cases the Court said in effect that riding upon the platform is not necessarily "contributive negligence;" if the passenger is there by permission he is entitled to be carried with due care. In both cases the companies relied upon a notice posted in the car forbidding passengers to "get on or off" by the front platform; but this sort of notice was declared to have no bearing on the question of the rightfulness of riding there; though if a person were hurt while getting on or off contrary to such a rule his injury would be pronounced "his own fault."

Earnings and Expenses of Four Trunk Lines.

The publication of the New York Central report today enables us to make a comparison of the gross and net earnings and working expenses of the four trunk lines for the year ending with September. This is not the Pennsylvania's fiscal year, but as it reports expenses as well as earnings monthly, we are able to give these figures for it. For the four roads they have been:

	1881-82.	1880-81.	Inc. or Dec.	P.c.
Gross earnings.....	\$30,678,781	\$2,338,396	D. \$1,719,115	5.3
Expenses.....	19,395,974	10,404,786	D. 68,812	0.4
Net earnings.....	\$11,282,807	\$12,883,610	D. \$1,630,803	12.8
<i>Erie :</i>				
Gross earnings.....	\$19,95,5774	\$20,715,605	D. \$739,831	3.6
Expenses.....	13,088,094	13,256,730	D. 168,138	1.3
Net earnings.....	\$6,887,680	\$7,459,375	D. \$571,645	7.7
<i>Pennsylvania :</i>				
Gross earnings.....	\$47,132,793	\$43,884,698	I. \$3,248,095	7.4
Expenses.....	29,500,663	26,80,170	I. 3,29,490	12.3
Net earnings.....	\$17,632,133	\$17,084,528	I. \$18,605	0.1
<i>Baltimore & Ohio :</i>				
Gross earnings.....	\$18,383,876	\$18,463,877	D. \$80,001	0.4
Expenses.....	10,020,214	11,390,479	D. 461,265	4.1
Net earnings.....	\$7,454,602	\$7,072,398	I. 381.64	5.4
<i>The four lines :</i>				
Gross earnings.....	\$116,191,224	\$115,412,576	L. \$708,648	0.6
Expenses.....	72,922,912	70,391,665	L. 2,531,277	3.6
Net earnings.....	\$43,168,282	\$45,020,911	D. \$1,822,629	4.0

The percentages of increase or decrease on the several roads compare as follows:

	N. Y. Cen.	Erie.	Penna.	B. & O.
Gross earn.....	D. 5.3	D. 3.6	I. 7.4	D. 0.4
Expenses.....	D. 0.4	D. 1.3	I. 12.3	D. 4.1
Net earn.....	D. 12.8	D. 7.7	I. 0.1	I. 5.4

As was to be expected, and as we have said in reviewing the Baltimore & Ohio report, the New York Central suffered most from the railroad war and the poor crops; the Pennsylvania next to it probably suffered most from these causes, but the other traffic on its lines was so active that this loss is not felt, and there is a large increase of gross earnings reported, which was prevented from being a large one in net earnings only by an extraordinary increase in working expenses.

Indeed the Pennsylvania's increase is so large that it more than balances the aggregate decreases of the other three roads, so that in the aggregate the four lines earned gross a little more last year than the year before. But it is the Pennsylvania's enormous increase in expenses also which much more than neutralizes

the aggregate decreases of the other roads. Only the New York Central and the Erie show any decrease in net earnings, and the Central's was nearly three times as great as the Erie's, which was almost wholly due to the growth of coal traffic on the Erie, we should say.

From 1880 to 1881 the aggregates of these four trunk lines showed an increase of \$4,867,136 (4.4 per cent.) in gross earnings, an increase of \$7,179,185 (11.4 per cent.) in working expenses, and a decrease of \$2,311,990 in net earnings.

Record of New Railroad Construction.

This number of the *Railroad Gazette* contains information of the laying of track on new railroads as follows:

Atlantic & Pacific.—Extended west to Chino Cañon, Ariz., 27 miles.

Belleville & Carondelet.—Completed from Belleville, Ill., west to East Carondelet, 17 miles.

Denver & Rio Grande.—Track on the *Utah Extension* is extended from Grand Junction, Col., west to the Utah line, 37 miles. Gauge, 3 ft.

Northern Pacific.—Extended from Livingston, Mont., west 25 miles. The *Fargo & Southwestern Branch* is extended from Sheldon, Dak., northwest to Lisbon, 15 miles.

Pittsburgh, Bradford & Buffalo.—Extended from Frost's Mills, Pa., northeast to Sheffield Junction, 10 miles. Gauge, 3 ft.

St. Paul, Minneapolis & Manitoba.—The *Larimore Branch* is extended from Larimore, Dak., northwest to Bartlett, 20 miles.

This is a total of 151 miles of new railroad, making 9,799 miles thus far this year, against 7,808 miles reported at the corresponding time in 1881, 5,987 miles in 1880, 3,643 miles in 1879, 2,263 miles in 1878, 2,919 miles in 1877, 2,278 miles in 1876, 1,333 miles in 1875, 1,844 miles in 1874, 3,630 miles in 1873, and 7,160 miles in 1872.

MEASURES OF TRAFFIC IN ENGLAND can hardly be said to exist, because their passenger mileage and tonnage mileage are not reported, but only the numbers of passenger and of tons of freight carried, which are absolutely valueless of themselves as measures of traffic. It seems strange that among a people who, as the greatest of investors in railroads, have most frequent occasion to analyze railroad reports and inquire into railroad business there should be such a universal misapprehension of the true criterion of traffic that when the true measures are given they do not know how to use them. A striking instance is a letter signed "An Atlantic Bondholder," in a recent number of the London *Railway News*, which we give in full below:

"I notice, in the report of Messrs. Allport and Swarbrick remarks to the effect that the *Atlantic & Great Western*, having no terminus at New York or Chicago, does not possess the earning power of other railways having these advantages. Permit me to call your attention to the Pittsburgh, Fort Wayne & Chicago. This line, like the *Atlantic*, has no terminus at large towns, and, like it, is a mere link in the chain of communication. Compare, however, the results of the working of the two systems, as shown in the following figures, taken from 'Paris National' for 1881.' The two roads traverse identically the same kind of country. The *Atlantic* carries 250,000 tons of freight more than the Fort Wayne, and receives for the work only about one-half of the receipts of the Fort Wayne for the smaller tonnage. There must surely be a 'nigger in the fence' somewhere."

Pittsburgh, Fort Wayne.	Atlantic & Great Western.
Miles open.....	468 557
Number of engines.....	278 209
Number of passengers.....	2,596,000 1,323,000
Tons of freight.....	3,865,000 4,125,000
Gross receipts.....	10,066,000 5,265,000
Net receipts.....	4,778,000 1,690,000
Per cent. of working.....	53% 68
Rolling stock.....	6,782 4,643

The figures given here are for the year 1880 and are substantially correct. How little to the purpose they are and how utterly they fail to warrant the conclusion drawn, may be seen from these other figures, given in the same reports of these railroads:

Fort Wayne.	Atlantic.
Passenger miles.....	104,287,000 56,035,000
Ton-miles.....	806,257,000 474,280,000
Passenger train miles.....	1,874,000 1,395,000
Freight train miles.....	6,462,000 5,300,000
Average train load:	
Passengers.....	57 40
Tons.....	125 594

The "Atlantic Bondholder" found that his road carried 6 per cent. more tons of freight than the Fort Wayne, and thereupon said it had a larger freight traffic. In fact we see that it had but 474 millions of ton-miles to the Fort Wayne's 806—not 6 per cent. more freight traffic, but 40 per cent. less. It never seemed to occur to him that length of haul could have anything to do with the matter, but as, on the average, the Fort Wayne carried each ton of freight 286 miles, and the Atlantic but 115, it made a vast deal of difference.

Then, the Atlantic traffic being local to so great an extent, it had much smaller average loads, and with little more than half the Fort Wayne's passenger traffic, it had more than three-fourths of its passenger-train mileage, and with 40 per cent. less freight traffic it had but 29 per cent. less freight-train mileage.

This particular Atlantic bondholder was, it is to be hoped, an exceptionally ignorant one as regards the geography of the roads he compares. The Fort Wayne, he says, "like the Atlantic, has no terminus at large towns, and, like it, is a mere link in the chain of communication." Evidently he does not know that the Fort Wayne roads has one terminus in Pittsburgh and the other in Chicago, or else is ignorant of the fact that more freight is shipped and received at these two towns than at any others in America, west of the sea-board.

When it is known that it is with intelligence like that

displayed in this letter that managers of American railroads largely owned in England have to deal, it will be admitted, we think, that their lot is not always a happy one.

CHICAGO RAIL SHIPMENTS EASTWARD for the week ending Dec. 14 for four years, have been:

	1879.	1880.	1881.	1882.
Tons.....	42,529	48,602	54,325	40,335
Grain rate per 100....	33 cts	33 cts	12½ cts.	30 cts

The shipments this year were thus 9 per cent. less than in the corresponding week of last year, but larger than in either of the other years. The earnings from these shipments must have been about at the rate of \$218 this year to every \$100 last year, \$251 in 1880 and \$200 in 1879.

The shipments above reported for this year, including all freight forwarded from Chicago to points as far east as the western terminus of the trunk lines (Buffalo, Pittsburgh, etc.), including freight billed from places west of Chicago, are somewhat less than those reported as billed at Chicago alone; this may be due to the forwarding of some freights billed at the old rates and not included above. For seven successive weeks the shipments have been, in tons:

	Week to	Oct. 31.	Nov. 7.	Nov. 14.	Nov. 21.	Nov. 31.	Dec. 7.	Dec. 15.
		34,041	43,683	44,721	50,401	57,206	23,976	49,335

The shipments here given for the first week of December, as was explained last week, included only those billed at the advanced rate of Dec. 1, and therefore none of the shipments from points west of Chicago billed from point of shipment before Dec. 1. But the shipments here reported are less in the second week of December than in either the third or fourth weeks of November. This, it is true, is the ordinary course of things, that is, shipments usually fall off somewhat in December; but it is contrary to the reports of shipments billed at Chicago, which have been growing larger every week.

Of the shipments for the week the Chicago & Grand Trunk carried 14.5 per cent. of the whole, the Michigan Central 26.1, the Lake Shore 22.7, the Fort Wayne 18, the Pan-handle 10.9, and the Baltimore & Ohio 7.8 per cent. Thus the two Vanderbilt roads together had 48.8 per cent. of the whole, against 45½ in the pool, and the two Pennsylvania roads 28.9 per cent., against 35½ in the pool. The latter have considerably exceeded their percentage for some months.

The total Chicago shipments in the month of November were distributed among the several roads as follows, to compare with which we give the percentage to which they are entitled under their agreement with each other, and for which they will finally receive payment:

Percentages:	Mich.	Lake	Fort	P. C. &	
Cen.	Shore	Wayne	S. L.	B. & O.	
Actual.....	15.1	25.2	18.1	16.5	6.6
In pool.....	11.0	234	21½	10	8

The two Vanderbilt roads thus carried 44.3 per cent. of the whole in November, instead of the 45½ to which they were entitled, and the two Pennsylvania roads received 34 per cent., while entitled to 35½. The Grand Trunk's excess came about equally from the Vanderbilt roads, the Pennsylvania roads, and the Baltimore & Ohio.

For the week ending Dec. 16 the shipments billed at Chicago (not including those from points west billed through Chicago) were 52,642 tons, against 43,889 tons in the corresponding week of last year and 50,933 tons in the previous week of this year. These are among the largest shipments that have ever been made. Compared with last year, there is an increase of 5 per cent. in provisions, of 17 per cent. in grain, and of 40 per cent. in flour. The earnings from these shipments must have been about at the rate of \$228 this year to every \$100 last year—an increase of 188 per cent.

Though flour shipments are now unusually large the grain shipments still exceed them by 150 per cent., and the demand for new corn is likely to keep the grain shipments heavy for a considerable time, though this demand can be supplied now from places south of Chicago better than from Chicago.

THE EFFECT OF THE ST. PAUL RAILROAD WAR ON FREIGHT TRAFFIC

we may now trace from the beginning to the end of the contest. Rates were restored on Thursday of last week, but doubtless little freight reached Chicago or Milwaukee last week that was shipped at the advanced rates. The receipts of flour and wheat at Chicago and Milwaukee for the week ending November 11 (one week before the war broke out), and for the four weeks of the war were:

Flour, bbls.: Dec. 16.	Dec. 9.	Dec. 2.	Nov. 25.	Nov. 11.
Chicago.... 121,353	155,994	134,489	132,402	134,802
Milwaukee.... 84,110	79,006	106,887	112,689	108,322

Both..... 205,463 235,000 244,376 245,091 243,124

Wheat, bush.:	Chicago....	417,919	442,477	416,410	549,536	840,121
	Milwaukee....	218,673	243,238	19,513	218,642	204,157

Both..... 636,504 685,733 608,928 763,178 1,044,278

Flour and wheat at both pl'd's, bus..... 1,561,177 1,743,235 1,708,620 1,871,087 2,138,336

Throughout the last week negotiations were going on that resulted in the restoration of rates, and this was everywhere known, and should, it seems, have led holders of grain and flour to forward as much as possible. But actually we see that the flour receipts at the Lake Michigan ports were considerably less than in any previous week, and the wheat receipts less than in any previous week except one. Taking flour and wheat together, the receipts were smallest in the last week of the war, smaller in every week during the war than in the week before the war, and in the last week no less than 27 per cent. less than in that week before the war.

So far as these figures go, therefore, there is no sign that traffic was stimulated by the low rates. It is, however,

entirely possible that there would have been a greater falling off in receipts if it had not been for the low rates of the war, and that these rates did make the shipments larger than if the old rates had been maintained. If so, we shall see a considerable decrease in the receipts during the current week—the first in which the flour and wheat from the points affected by the war paid the restored rates. We should naturally expect the accumulated stocks to be greatly reduced during the war, so that even with the same disposition to ship less would go forward, because there would be less in store to ship.

THE NEW YORK CENTRAL & HUDSON RIVER REPORT we receive so very little time before going to press that we are unable now to present it with our usual comparisons, etc., to say nothing of analyzing it. The net results are the poorest the consolidated company has ever shown, the surplus over fixed charges lacking \$1,400,000 of the 8 per cent. dividend paid. That is, the profits per share of stock were but \$6.42 per share of stock, against \$8.82 in 1880-81 and \$11.82 in 1879-80—the most prosperous year in the company's history.

Considering the ruinous rates of last year, and the great falling off in agricultural freight, the wonder is not that the profits were so small, but that they were so large.

The report shows an increase in passenger traffic from 374 to 434 millions of passenger miles (16 per cent.), and an increase of \$858,000 (10 per cent.) in passenger earnings, but a decrease from 2,647 to 2,421 millions of ton miles (8½ per cent.) in freight traffic, and of \$3,061,500 (13½ per cent.) in freight earnings.

It is plainly evident, then, that there would have been a decrease of earnings had there been no railroad war, as in spite of the low rates of that war, which diverted much traffic from the canal, the freight traffic was much smaller. But also, doubtless, had there been no railroad war the net earnings of the company would not have been reduced by anything like as much as \$1,650,000, which was the actual decrease from the previous year.

The company's capital is increased \$5,000,000, by the issue of that amount of bonds, which sold for \$6,590,000, or at a premium of 31.8 per cent. Against this increase of capital we have the following principal additions to assets: \$2,686,700 for new construction, \$589,900 additional investment in Merchants' Dispatch, \$589,700 invested in Morris River Canal Co., an increase of \$472,000 in the stocks of supplies, of \$795,000 in the cash on hand and of \$158,000 in the amount due from the government—all reasonable additions to the company's property.

The most encouraging feature of the report is the note at the close, which says that the gross earnings for the three months since the close of the year reported on—that is, the last quarter of the calendar year—are about \$1,200,000 more than last year.

THE DIVERSION OF BUSINESS FROM NEW YORK BY THE FREIGHT-HANDLERS' STRIKE has been represented as something tremendous by those who brought action against the railroads, one estimate making the loss to the merchants not less than \$6,000,000, chiefly by loss of orders which were sent to other cities because they could not be filled promptly at New York.

If trade was diverted from New York in June and July, it must have been diverted to Boston, Philadelphia or Baltimore, or all of them, and as records are kept of the shipments from all these cities, we should expect to find evidence of this diversion in these records. Of the total shipments from these four sea-board cities, from which this country obtains its chief supplies of merchandise, New York should have had a smaller proportion than usual. In fact, we learn that New York's percentage of the total shipments of the four cities in June and July for four years has been:

	1879.	1880.	1881.	1882.
June.....	5½	5½	5½	5½

Thus, instead of having a smaller share of the shipments in the months of the strike than in corresponding months of previous years, New York had a larger one. However much it may have suffered by the strike, the other towns did not gain by it, doing then worse than usual and not better.

Shipments were light at New York in July; but they were light also everywhere else. Compared with July in 1881 there was, however, an increase (9 per cent.) at New York, while at the other three ports there was a decrease, in the aggregate, of 16 per cent. In June the shipments from New York were no less than 51½ per cent. more this year than last; the shipments of the other three ports were 38 per cent. greater. In spite of the strike then New York gained more than the other ports in June, and gained while they lost in July.

THE DELAWARE, LACKAWANNA & WESTERN RAILROAD has begun to carry freight between New York and Buffalo, thus adding one to the number of Eastern trunk lines. It is not yet as fully prepared to do business to all Western points as it hopes to be hereafter, its main connection at Buffalo now being the Grand Trunk. There have been reports that the maintenance of west-bound rates is threatened by the competition of this road. This is very improbable, however. Very likely, like nearly every other new road, this one will carry at something less than the regular rates if necessary in order to secure a beginning of business; but that is expected, and is not likely to cause trouble. All the lines know that the new road is bound to have some of the traffic, and that at first it will not easily get any without making it for the advantage of the shipper to take his patronage, or part of it, from the road which has heretofore had it, and

try the new one. But the Lackawanna is less likely than most roads, perhaps, to carry at unprofitable rates, and when it has made itself known among shippers and secured sufficient Western connections, we may expect it to apply for a regular share of the New York business in the pool.

THE EAST-BOUND FREIGHT MOVEMENT FROM THE SEABOARD, which is perhaps a better measure of the prosperity of the country—of its ability and disposition to purchase—than anything else, has, we are informed, been larger since rates were advanced July 1 than in any other year except last, when the low rates gave the railroads nearly all the shipments which ordinarily go by canal and by the more indirect rail routes. And the decrease from last year even has not been great. Compared with 1880, when this traffic was more profitable than in any other year, the shipments from New York for the five months July to November, inclusive, were about one-sixth greater this year. There was a considerable falling off from October to November, an advance in rates having been made Nov. 1, but there was a decrease almost equally great from October to November last year, when there was no change in rates. The total west-bound shipments of the year have been much greater than ever before, but in the first half of the year they were made at the very low rates of the railroad war.

MRS. J. EDGAR THOMSON, widow of the late eminent President of the Pennsylvania Railroad Company, last week provided, out of her private means, for a home for orphans of Pennsylvania employés. Mr. Thomson had during his life indicated that he hoped to found such an institution, but he made no provision for it in his will. This unfulfilled hope, or, at most, unexecuted intention of the dead President, thus becomes a reality by the generosity of his widow, who after his death makes his charity alive again.

Historical Development of the Organization of the Pennsylvania Railroad.

II.

ORGANIZATION OF 1882.

The President is Chairman of the Board, which is divided into the following standing committees, namely: On Finance, On the Road, On Real Estate, On Incidental Business, On Supplies, On Insurance; of each of which the President (and any Vice-President who attends) is *ex officio* a member.

The administrative duties of the road, its branches, and as involving connecting roads, are distributed as follows: the General Office, the Transportation Department, Supply Department, Real Estate Department, Accounting Department, Treasury Department, Legal Department, and agencies for special objects.

General Office.—The President has general direction and supervision of all departments, and is aided by an Assistant to the President.

The First Vice-President has general supervision of all matters pertaining to the financial condition of the company, and is charged with general supervision of the Treasurer's and the Controller's Departments. The nominations of clerks in these departments are confirmed by him, and he may at any time direct the discharge of any officer in them, if, in his judgment, required by the interests of the company. In the absence of the President he acts as President.

The Second Vice-President has, through the General Manager, general supervision of the Transportation Department, and through the Passenger and Freight Agents and the Empire Line the control of rates.

He has special charge of those relations with competing companies and connecting lines associated with the performance of this duty.

He exercises special supervision over receipts and disbursements of lines owned, operated, or controlled by the company, east of Pittsburgh and Erie; and he aids the President in all matters relating to roads in which the company holds an interest.

The Third Vice-President has general charge of construction and of the promotion and construction of all new lines in which the company may become interested; plans, estimates and contracts for such work being submitted by him to the President.

The Fourth Vice-President exercises special supervision over the receipts and the disbursements, and assists the President in matters connected with the operation and the management of those railroads west of Pittsburgh directly or indirectly controlled by the company.

The Assistant to the President gives attention to the corporate organizations of branch lines in New Jersey and to duties in connection with the local interests of the company within the city of Philadelphia.

The Treasurer keeps the accounts of all funds that may pass into his hands, and has charge of funds deposited in banks or other places of deposit designated by the Board. He signs all checks, or delegates this duty to the Assistant Treasurer, pays all vouchers which have been duly certified to and approved for payment by the Controller, or such other officer of the Controller's department as the President or the Board may have designated, having been examined and registered by the Auditor of Disbursements or his Assistant, whose approval is endorsed thereon. Expenditures for dividends and interest, and other expenditures directed by the Board, do not require this endorsement. The Treasurer has authority, subject to approval of the President or the First Vice-President, to appoint a Cashier of the Empire Line, and such bookkeepers, clerks and bank messengers as are necessary for his department.

The Secretary keeps record of proceedings of the Board,

cancels certificates and registers all certificates of stock, and signs all bills of the general expense account which have been duly approved, and the general expense pay rolls. He has custody of the originals of all contracts, agreements, and of all other valuable papers. He has charge of the general office buildings, repairs, purchases, and employés necessary thereto, except the Treasurer's bank messengers. He is aided by the Assistant Secretary.

Transportation Department.—The General Manager is in charge. He has authority (with the approval of the President) to order, through the Supply Department, machinery and tools for the shops, materials for repairs of rolling and floating stock, machinery and roadway, and for all other purposes of his department, special contracts requiring the sanction of the President or the Board.

With the assent of the President, he nominates for confirmation by the Board suitable persons for the offices of his department, including station agents of the road and its connections, and may direct the removal or suspension of the same at his discretion, or upon order of the President; but he shall in all cases report to the Board the reason for such dismissals.

He defines in detail the duties of all subordinate officers and agents in his departments, subject to the approval of the President. He keeps the President and Board fully advised of all the occurrences and transactions of importance in connection with his department, and advises the vice-presidents of all matters affecting their respective departments.

The General Manager is assisted by a Chief Engineer, a General Superintendent of Motive Power, and a Superintendent of Transportation, who may be said to form his staff. The roads and canals owned and operated by the company are divided into three principal divisions, each in charge of a General Superintendent, reporting to the General Manager.

The Pennsylvania Railroad Division consists of the Main Line and branches from Philadelphia to Pittsburgh.

The United Railroads of New Jersey Division consists of leased and operated roads in New Jersey, including the Philadelphia & Trenton Railroad, the Connecting Railway and branches, the Ferry and the Delaware & Raritan Canal.

The Philadelphia & Erie Division consists of the Philadelphia & Erie Railroad, leased lines and branches.

The Chief Engineer acts as assistant to the General Manager in matters connected with maintenance of way so far as standards and new construction are concerned.

Under the General Manager, he has the direction of construction work and charge of a corps of constructing engineers.

He is assisted by an Engineer of Bridges, and who has also the special duty to make periodical examinations of all the bridges on the several roads, reporting their condition through the Chief Engineer, to the General Manager and the respective general superintendents.

The Chief Engineer as a matter of custom has charge of the purchase of ties for the divisions of the roads which are deficient in wooded country, and the distribution of ties between the several divisions, acting as regards maintenance of way materials as does the General Superintendent of Motive Power in regard to shop materials.

The General Superintendent of Motive Power has supervision and control of the standards of the Motive Power Department. He keeps record of the numbers and conditions of the locomotives, cars, floating equipment and machinery owned by the company upon its own road and upon leased and controlled lines, the general superintendents reporting to him such facts as he may require for this purpose.

He has charge of tests and experiments of the record of all patents owned or purchased by the company, and the dissemination of information concerning the rights of the company therein. It is his duty to make such suggestions to the respective general superintendents as he may deem necessary for the efficiency and the economy of the service.

By its relations to the shops at Altoona, the office of Superintendent of Motive Power for the Pennsylvania Railroad Division becomes the most important one of the road, having supervision over standard forms of construction in the shops of several divisions and roads, distribution of material to these and a certain oversight over their accounts. A general superintendency of motive power for the system was in fact already developed before the formal establishment of the office (1882).

The Superintendent of Motive Power for each division has immediate relations with the heads of the shops, and retains the details of distribution of materials and of supervision over shop accounts of the division. These accounts on each division of the road are now reported to a chief clerk of accounts. The General Superintendent of Motive Power has charge of tests, of the drawing rooms and offices of the Mechanical Engineer, and retains a Motive Power Chief Clerk, who, however, no longer receives detailed reports.

There are meetings of superintendents of motive power at his office, which replace in some measure formal reports.

The Superintendent of Transportation has charge of the distribution of the car equipment; he keeps record of all cars belonging to the company, and an account of the amounts due to it for the use of its cars on foreign roads and due to foreign roads for the use of their cars on the roads of the company, and the settlement of such accounts. It is his duty to see that the cars of the company perform the fullest possible service both as to loading and continuous use.

The General Superintendents are responsible for the maintenance of track, for the proper discipline of em-

ployés, for the safe and economical movement of freight and passenger traffic, and for the maintenance of efficient service on their respective divisions.

They nominate to the General Manager, for submission by him to the Board, proper persons for the various offices on their divisions, including station agencies. They have charge of the company's real estate and personal property on their respective divisions, including shops, depots and other buildings, motive power, rolling and floating stock, etc.

Each General Superintendent is assisted by a Superintendent of Motive Power and an Engineer of Maintenance of Way.

Practically the duties, or at least those more important to the company, of the General Superintendent, are constant supervision rather than independent direction. They strengthen the organization and form an available corps of experienced general officers from which the highest positions of the company are filled.

One quality of the Pennsylvania Railroad Company as an organization is strength, that is to say, such a division of duty and responsibility as enables it to use the ability of all its officers without dependence upon any one of them. Every part of the organization exhibits an intelligence in its practical working out which comes, and can come, only from the untrammeled activity of a number of minds. This is the secret of that perfection and thoroughness of detail everywhere shown in the operations of the road.

We have spoken of its third President, J. Edgar Thomson, as the organizer of the company; this we have inferred from the study of certain facts; but while this may be true as regards that informal part of the organization which is felt rather than anywhere clearly defined, we must regard the formal organization of the road as due to the activity of many judgments influenced by practical experience, not only in several departments, but in the working together of these as an association. What may be called the policy of the road as regards all of its officers (to which we have already referred) has resulted in its present organization; this has not been the creation of any one, two, or even of few minds.

Superintendents of Motive Power have charge of the machine and car shops and of the maintenance and repair of locomotives, cars, floating stock, etc., on their divisions.

Each is assisted in the machine shop by a Master Mechanic and in each car shop by a Foreman of Car Repairs, but orders referring to shop discipline, increase or decrease of force, changes in rates of wages, are transmitted through the Division Superintendent.

Engineers of Maintenance of Way have their duties defined by their title.

THE PENNSYLVANIA RAILROAD DIVISION.

There are ten subdivisions, each in charge of a Division Superintendent.

The Philadelphia Division extends from Philadelphia to Harrisburg, including the East Brandywine & Waynesburg Railroad, the West Chester Branch and the Pomeroy & State Line Railroad.

The Middle Division extends from Harrisburg to Altoona.

The Pittsburgh Division extends from Altoona to Pittsburgh, including the Ebensburg & Cresson Railroad and the Southwest Pennsylvania Railway.

The Bald Eagle Valley Railroad, the Tyrone & Clearfield Railway, the Lewisburg & Tyrone Railroad, and the Tyrone Branch constitute the Tyrone Division.

The Western Pennsylvania Railroad, its branch to Allegheny City, and the Indiana Branch, constitute the West Pennsylvania Division.

The Mifflin & Centre County Railroad, and the Sunbury & Lewistown Railway constitute the Lewistown Division.

The Bedford & Bridgeport Railroad constitutes the Bedford Division.

The Columbia & Port Deposit Railroad, the Columbia Bridge, the branch to York, the Hanover & York, the Littlestown and the Frederick & Pennsylvania Line railroads constitute the Frederick Division.

The Pittsburgh, Virginia & Charleston Railway, and the Port Perry Branch constitute the Monongahela Division.

The Altoona yard and the Hollidaysburg & Morrison's Cove, the Newry, the Williamsburg, and the Springfield branches constitute the Altoona Division.

UNITED RAILROADS OF NEW JERSEY DIVISION.

There are three sub-divisions.

The New York Division, extending from Philadelphia to Jersey City, and including the Frankford & Holmesburg Branch, the Princeton Branch, the Rocky Hill & Kingston Branch, the Millstone & New Brunswick Branch, and the Perth Amboy Branch, and also the ferry and transfer facilities connected therewith.

The Amboy Division, extending from Amboy to Camden, including the Pemberton & Highstown Railroad, the Camden & Burlington County Railroad, the Vincentsburg and Medford branches, the Burlington & Mount Holly Railroad, the Philadelphia & Long Branch Railway, the Columbus, Kinkora & Springfield Railroad, the Freehold & Jamesburg Agricultural Railroad, the Pemberton & Sea Shore Railroad, and the branches extending from Bordentown to Trenton, and from Jamesburg to Monmouth Junction, and including also the boats engaged in the transportation of freight and passengers connected therewith.

The Belvidere Division, including the Belvidere Delaware Railroad, the Flemington Railroad and the Delaware & Raritan Canal.

THE PHILADELPHIA & ERIE RAILROAD DIVISION.

Is in four sub-divisions:

The Eastern Division, extending from Sunbury to Renovo,

including such roads as may be operated in connection therewith.

The Middle Division, extending from Reno to Kane.

The Western Division, extending from Kane to Erie.

The Sunbury Division, extending from Sunbury to Tomhicken.

Division Superintendents exercise all the powers of the general superintendents necessary for the proper management of their divisions, and are responsible for the maintenance of track, the safe movement of trains and the proper transaction of business thereon.

In the sense of subordinate activity the division superintendent is an active executive officer; the General Superintendent a supervisory officer—at least so we infer.

This distinction is noted in order to show the practical working out of the organization.

The Pennsylvania Railroad Company, it should be clearly understood, is not merely an organization in form, but in fact: requiring supervision rather than constant direction and interference as regards all subordinate operations.

Necessarily, many duties and offices are not clearly defined as to their limits, but here the informal part—i. e., the customs and traditional spirit of the organization—makes up for definite limitations.

Our meaning may be illustrated by the remarks of a gentleman now high in office in the road to a youthful subordinate :

"Young man, you will discover that I can do very little on this road, but we can accomplish almost everything."

Assistant Engineers.—Each Division Superintendent has assigned to his division an Assistant Engineer in special charge of the maintenance of the road-bed, culverts, bridges, track and buildings, and of matters pertaining to the maintenance of way, and who acts under his direction and is responsible to him for the performance of these duties and for the condition of the road.

It will be observed that there has been a radical change of principle in this respect since the first organization of the road. This change probably began with the organization of 1862, but when formally made we are not able to state.

It will be observed that the Pennsylvania Railroad Company is organized both by departments and territory.

This system has grown out of the experience of many years, and at times has left the limits of some offices quite undefined. The organization of the present year, however, does away with this indefiniteness.

The present working corps may be likened to an army, with a President as Commander-in-Chief, a Lieutenant-General (or Secretary of War, if the comparison be preferred), a General in the field commanding, major-generals of divisions, brigadier generals of brigades, and colonels of regiments, each of these officers having a personal staff. The various officers of staff have relations one to another not found in an army. The organization cannot be said to be military, except as regards a certain form. In fact, it can not be likened with exactness to any other type of organization. Its *esprit de corps* separates it from other organizations. There is a freedom for suggestion and mutual consultation and for independence of action not found in an army; and which did it not exist in a railroad organization would result in a species of "red tape," destructive to all proper conduct of business. Nevertheless, as is well known, the Pennsylvania Railroad possesses a uniformity of methods and a discipline in operation which makes it in fact as well as in form, on all its various branches, one united system of control and of standard forms, both in its machines and in its operations.

THE FREIGHT AND PASSENGER DEPARTMENTS.

These remarks may be illustrated by the methods in which rates are fixed and maintained. (We prefer the preposition "in" as indicating the fixed facts of organization rather than the direct control by individual will.) The staff of the Second Vice-President, as regards rates, may be considered to be the General Passenger Agent and General Freight Agent. The general supervision of the President always understood, this part or committee of the organization fix the rates. Station and foreign agents receive instructions in all matters pertaining to the receiving and forwarding of freights from the General Freight Agent. The station agents, however, belong to the General Manager's department. The Auditor of Freight Receipts is an officer of the Accounting Department under the Comptroller and First Vice-President; but the maintenance of rates by the local agent depends upon his action through the General Manager.

We shall not in this place enter upon a detailed description of the admirable method of freight and passenger accounts.

THE SCRAP HEAP.

Car Notes.

A statement has been going around that the Peninsular Car Works at Adrian built 2,000 cars this year. We are informed that the Peninsular Car Works were built in 1882, at the Adrian and Detroit shops, 5,500 cars in all.

There has recently been made of an improved stock car invented by E. J. Kohler, of York, Pa. A sample car built for Mr. Kohler is 42 ft. long and 8 ft. wide; it is divided into 16 stalls, each fitted with cast-iron feed and water troughs supplied from reservoirs on top of the car. The stalls are divided by canvas partitions, which can be rolled up out of the way. A second floor is provided, which can be raised to make a double-deck car for sheep. A recent trip from Chicago is said to have been very successful.

The L.-high Car-Wheel & Axle Works of McKee & Fuller are making 10 box cars a day.

The Barney & Smith Manufacturing Co., Dayton, O., is building some beautiful drawing room cars for the New York & Boston Shore line, and sleepers for the St. Paul, Minneapolis & Manitoba, and Wisconsin Central roads. The Wisconsin Central cars have solid mahogany finish inside. The

company is also building a number of freight cars for the St. Paul, Minneapolis & Manitoba, the Milwaukee, Lake Shore & Western, and other roads.

The Laconia Car Co., at Laconia, N. H., is building some passenger cars for the Atchison, Topeka & Santa Fe road.

Bridge Notes.

Clarke, Reeves & Co., of the Phoenixville Bridge Works, are building several bridges for the New York, West Shore & Buffalo, and an iron bridge 900 ft. long, with a draw-span of 300 ft., over the Yazoo River in Mississippi. They have taken a contract for several bridges on the new Phoenixville Branch of the Pennsylvania Railroad.

Bust & Coolidge, of Chicago, are building for the Texas & St. Louis road a bridge over the Arkansas River at Rob Roy. The bridge is 1,577 ft. long, having a draw-span of 358 ft., five fixed spans of 200 ft. each, and two of 100 ft. each. In a recent issue the length of draw-span was stated at 850 ft., which was obviously a misprint. Mr. C. D. Purdon is Engineer in charge of the bridge.

The Keystone Bridge Co., of Pittsburgh, has taken the contract for a steel bridge of 146 ft. span over Turtle Creek near Port Perry, Pa., for the new Pittsburgh, McKeesport & Youngstown road.

Iron and Manufacturing Notes.

The telegraph key invented by Mr. E. G. Stevens, Chief Operator in the General Manager's office of the New York, Pennsylvania & Ohio road at Cleveland, is being introduced by L. G. Tillett & Co., of New York. It is claimed that this is a very easy working key, being free from the unending jar of most keys in use.

The iron production of the works of the Colorado Coal & Iron Company in November was 2,204 tons of pig-iron, 4,293 kegs of nails and 422 kegs of spikes. The steel production reported is 2,048 tons of ingots, 2,179 tons of blooms and 2,135 tons of rails. The company has issued a map showing the location and railroad connections of its works and also, in a very striking way, what may be called their isolated position. To the eastward the nearest blast furnace is in the central part of Missouri, and the nearest steel works in St. Louis. To the west and northwest there is nothing except a small charcoal furnace in California and another in Oregon.

The Variety Iron Works, in York, Pa., are making the cast-iron work for the station of the Brooklyn Bridge on the New York side.

The Miller Forge & Iron Co., Limited, is now operating the new works at Rankin Station, near Pittsburgh, as well as the old shops in the city.

Edith Furnace, in Pittsburgh, owned by the Manchester Iron & Steel Co., went into blast last week. The furnace is 16 ft. bosh and 75 ft. high, and has all the latest improvements.

The Stroudsburg (Pa.) Jefferson says of the works of the Tanite Co. in that town: "The new storehouse, 24 by 40 ft. two stories and an attic, which became a necessity with the rapidly increasing amount of work turned out, is now thoroughly finished. The company have also just built a new casting shed 16 by 80, one story high. They have also just completed the extension of the boiler shop, adding 19 ft. to the original one, which is now 50 ft. long. They have just put in place a new horizontal boiler, built by Tippett & Wood, of Phillipsburg, N. J. It is one of 65 horsepower, 15 ft. long and 5 ft. in diameter. It has 45 tubes 4 in. in diameter. This boiler is in addition, of course, to one of the same size in present use. They have also just added to their machinery a new Worthington double-acting steam pump, to be used as an auxiliary to the Niagara (Campbell & Hardick) pump now in use, both for boiler feeding and for use in case of fire."

The Rail Market.

Steel Rails.—Quotations continue at \$40 per ton at mill, with much business reported. There are reports that one or two large lots have been placed at \$39, but they are not considered altogether reliable.

Old Rails.—Some small sales of iron tees are reported at \$27.50 to \$28 in Philadelphia. Double-heads are quoted at \$29.50 to \$30, with very little business.

Embarrassments of Railroad Employees in Sonora.

A correspondent of the Mexican Financier writing from Hermosillo, on the Atchison, Topeka & Santa Fe's new Sonora Railroad, says:

"This well located city of 15,000 inhabitants is 90 miles from the now important port of Guaymas, and is the center of what would be one of the most promising states in Mexico were it not that the natives of Sonora seize every opportunity of exhibiting their malice against American enterprise. They thereby only show their ignorance of its importance to themselves. So we see the natural advantages of the state offset by the unwarrantable prejudices of those who are being most benefited by the new order of things. Fortunately the citizens of no other Mexican state are so short-sighted and small-minded as those of Sonora. Here no opportunity of annoying Americans is ever lost and interference frequently goes so far as the levying of fines and even the deprivation of personal liberty up in the slightest pretenses. On the arrival here of the first train from Guaymas, the engineer, conductor and brakemen were all arrested merely because the train was necessarily delayed. A Mexican having recently lost his baggage at one of the stations through his own negligence, an American baggage master was arrested for having stolen it without the least proof against him but merely upon the far-fetched supposition that he might have appropriated it. And he was fined \$10 even though no case could be made against him. The most provoking case of injustice is that of which Conductor Robinson is the victim. This courteous gentleman has been in the jail of this place for over sixty days, on the trumped-up charge of having seriously injured a Mexican by pushing him off the train. The facts in the case really are that the person in question jumped off the train at Magdalena, inflicted upon himself a few scratches, and his friends now offer to compromise with and release Mr. Robinson upon the payment of \$50. It is very unfortunate, to say the least, that this species of black-mail is connived at by the local authorities. And it is to be hoped that the attention of the Federal government in the city of Mexico will be called to this state of affairs. Otherwise the numerous instances of injustice practiced here may before long bring about border troubles, which will disturb the amicable relations now happily existing in all other sections between the people of Mexico and the citizens of the United States. The conduct of the Sonorans is particularly in marked contrast with the friendship and good feeling along the border of and throughout the neighboring state of Chihuahua. There the prosperity brought about by American capital is thoroughly appreciated and Americans are treated with all the respect and courtesy due to foreigners. But Americans are not to be wholly deterred from coming into this state, for certainly numbers are flocking in from Arizona and California, attracted here by the undoubtedly great resources of the state. No one can deny that they are bringing general prosperity in their wake. Never before in the history of Sonora has every variety of prosperity and labor realized such returns as at the present time."

The New York Locomotive Works.

The plant of the New York Locomotive Works in East Rome, N. Y., some miles or more from the city, has been more than once referred to in these columns. The buildings are the most noticeable object to a traveler approaching the city from the east. The six structures erected by the company, two of them two stories high, give a floor room of about 190,000 square feet, and are well adapted to their several uses. They are all well ventilated and lighted, unless it be the blacksmith shop, where more air is to be provided. Gas and water have been led from the city to the works, and the city has located gas lamps along the street. The buildings are heated by steam. A new building for offices and drafting rooms will be erected, and probably the coming season. Work was begun by the company a year ago last fall. The company owns 13 acres where its buildings are, and has 10 more further east, reserved in case of need. Men interested in the enterprise also own 52 acres across the road, part of the Norton farm. This plot of ground has been in part graded, divided by avenues and streets and laid out into lots. Houses from 75 to 100 houses will be erected by Rome capitalists in the early spring. The ground is well adapted for the new village, and the houses will be made as comfortable and sightly as practicable for the rent which their occupants will be able to pay. The company is already feeling the need of houses for its men, the larger part of whom are drawn to the city from distant places. The most of them come from Rhode Island and Pennsylvania, and from railroad shops in other parts of the country. Most of them are skilled mechanics.

The capital of the company was not fixed at a large sum on the start, and so much money has been spent on the plant and machinery that the stock will probably be increased. About half is held in New York, where Post, Martin & Co. and Winslow, Lonier & Co., bankers and equipiers of railroads, are interested, the remaining half in Rome. The company has a good financial backing, and it is believed will not be hampered by lack of means. The machinery of the works is all new, as is the equipment of the blacksmith shop, the molding room and other parts. The machinery is of the best. It comes mainly from Connecticut and Philadelphia, though some is from England. A steam riveter from William Sellers & Co. is a very effective machine. It stands in the boiler room, and with one stroke on the red hot rivet the steam hammer does what is ordinarily a task. The machine is operated by about four men, including the heater of the rivets. The very large slotting machine on the lower floor of the machine shop, from the works of Fairbairn, Kennedy & Naylor, Leeds, England, is said to be the finest machine of the sort in the country. The wheel machinery, from the same house, is exceptionally good. All parts of the finest locomotive will be made in the works, save the small wheels for the engine and tender. These, for the present, will be bought. The driving-wheels, however, will be cast, and all the other iron work, brass work, steel work and wood work will be carried on in the one establishment. The capacity of the works with the present force will be about from six to ten locomotives a month. When the full complement of men and machinery for which the plant is designed is hard at work, probably 15 locomotives can be made monthly.

The works are now filling an order for five first-class heavy freight engines for the Northern Pacific Railroad. The first of these was turned out Saturday, another will be ready for shipment this week, and the others are well along. Another order, upon which work has been begun in some departments, is for a number of six-wheeled switch engines, without truck, for the East Tennessee, Virginia & Georgia Railroad. These engines will be very heavy, weighing 36 tons, being six-wheeled, the drivers 42 in. in diameter, and with a cylinder 16 in. in diameter and with 24 in. stroke. The company has orders also for a number of ten-wheeled engines, and some for narrow-gauge roads. Its orders are for six or eight months ahead, and its mechanics are now working until 10 at night, daily, that its patrons may not be disappointed. The works at Rome now have from 350 to 400 men at work, with a monthly pay roll amounting to something like \$20,000. It is the design to employ from 800 to 1,000 men, thus doubling the force and capacity. There is, especially in the second floor of the machine shop, considerable unoccupied room. This will be used for new machinery, part of which is under contract.

There was rather more than the usual stir about the works Saturday. The occasion was the exhibition under steam of the first locomotive turned out—No. 255 of the Northern Pacific Railroad Company. Mayor Comstock, one of the directors, Miss E. Ernestine Nock, daughter of the President of the company, and others came down in the course of the day to see the locomotive and ride upon it. The engine is furnished with a cylinder 17 in. in diameter and having a 24 in. stroke. It is a heavy, eight-wheeled engine, with drivers 42 in. in diameter, a boiler 53 in., and will weigh about 40 tons when in service. It is designed for hauling freight. The eight-wheeled tender has a tank to hold 3,000 gallons of water, and is an uncommonly large one. The engine is arranged to take water from ditches alongside the road, with a siphon for filling the tank from the same. This and other details of the locomotive, as for the others which are to follow it into the far west, are in accordance with plans furnished by the corporation.—*Ulster (N. Y.) Herald*, Dec. 18.

Cleveland Bridge & Car Works Sale.

Messrs. Wm. H. McCurdy, Assignee, and Luther Allen, Trustee, will sell all the property of the Cleveland Bridge & Car Works at public sale in Cleveland, O., Jan. 17 next, at 11 o'clock. The real estate will be sold in five parcels, as follows:

1. The car shops and land.
2. The lumber yard.
3. The blacksmith shop and appendages.
4. The machine and riveting shops for bridge work.
5. The lumber and storage yard.

The sale will also include all personal property—tools, machinery, materials on hand, etc. The entire asset, excepting bills, notes, book accounts and choses in action, will be sold as a whole, free of encumbrances and for cash.

The premises and personal property can be inspected and printed schedules obtained on application at the office in Cleveland.

From Different Standpoints.

Not long since Wakefield Starkey, of Austin, while crossing the track of the International & Great Northern Railroad on a valuable mule, was struck by the locomotive and killed. The mule was also hurled into eternity. Wakefield Starkey, although a perfect gentleman on the street, was a domestic tyrant of the deepest dye. Without any provocation whatever, he used to beat his wife and lock her up in a wardrobe; hence, when she heard of his death, it was not so much a case of heavy bereavement as it was of mitigated affliction. As the engineer of the locomotive was clearly to blame for the accident, it was suggested to the widow that she bring suit for damages. She resolved to do so, and called at the office of the railway company. The proper official happened to be in. The widow had such a clear case against the company that it was deemed advisable to compromise the matter.

"Now, madam," said the official, after the widow had thrown back her veil and stated her business, "we are willing to do what is fair in this matter. There is really no occasion to go to law. It is a delicate subject to discuss; so I think, without going into the merits of it, I will tender you a check for \$4,000, and you will sign a paper releasing the company from all further demands."

The widow started, and said: "How much?"

"I am authorized to pay you \$4,000."

"I accept it," she said, very much agitated.

The check was handed over, the papers signed, and the widow walked out into the street in a bewildered frame of mind. As she cashed the check, she said to herself, confidentially: "I didn't expect to get more than \$50. I reckon that railroad fellow didn't know how old that mule was."

It had never occurred to her that she had sustained any loss in the death of her husband. On the other hand, the official said to one of the clerks: "That lady is letting us off dirt cheap. We usually have to pay \$5,000 for running over husbands."

It did not occur to him that the widow had sustained any loss whatever in the death of the valuable mule.

What a striking illustration of the fact that different people look at the same thing in a different light.—*Texas Siftings*.

Caution Against Accidents.

Mr. W. F. Merrill, General Superintendent of the Chicago & Alton road, has issued the following general order:

"During the winter months extreme caution is necessary to prevent accident."

"Passenger trains must be kept within the limits of absolute safety in making up time, and engineers and conductors must cut down all delays at stations, water tanks and coaling points to the lowest possible limit. Conductors, brakemen and porters must use every effort to load and unload passengers with dispatch. Promptness and vigilance in this respect will do much to keep our passenger trains on time, and avoid the necessity of increased speed in running."

"Fast running by freight trains is positively prohibited, and the entire crew of any freight train will be held strictly accountable for keeping strictly within the limit of speed allowed by the time card, unless they have special authority from authorized dispatches to exceed such limit."

"Every man is expected to do his whole duty."

A Bridge Accident.

A dispatch from San Antonio, Tex., Dec. 13, says: "At 7 a. m. on Tuesday the false work of the bridge aross Great Dry Cañon, four miles west of Pecos River on the Sunset road, and three-fourths of a mile from the end of the Southern Pacific track, fell in a solid mass, precipitating 19 hands a distance of 75 feet on the rocks below. Seven men were killed outright, one more has since died, and there is little hope for recovery of three others. The false work had been erected some time and the weight of the material brought upon it for the permanent bridge it is supposed was too great, and it gave way over the deep gorge, having almost perpendicular cliffs. The length of the bridge is 200 feet. The dead have been buried in an adjacent cave and two physicians are caring for the wounded. The disaster will delay the completion of the bridge perhaps 60 days."

A Marble Road-Bed.

The two most gorgeous sections of railroad in the world will be on the Marietta & North Georgia and the Western North Carolina at Red Marble Gap, N. C. Both roads will run for a mile on bed composed of variegated marble of the finest quality.

General Railroad News.

MEETINGS AND ANNOUNCEMENTS.

Meetings.

Meetings will be held as follows:

New York, New Haven & Hartford, annual meeting, in New Haven, Conn., Jan. 10, at 11 a. m.

Boston & Lowell, annual meeting, at the passenger station in Boston, Jan. 3, at 10:30 a. m.

Columbus, Hocking Valley & Toledo, annual meeting, at the office in Columbus, O., Jan. 9.

Dividends.

Dividends have been declared as follows:

New York & Harlem (leased to New York Central & Hudson River), 4 per cent., semi-annual, payable Jan. 2. Transfer books close Dec. 15.

New York, New Haven & Hartford, 5 per cent., semi-annual, payable Jan. 2.

Boston & Lowell, 2½ per cent., semi-annual, payable Jan. 1.

Norwich & Worcester (leased to New York & New England), 5 per cent., semi-annual, payable Jan. 10.

Central of Georgia, 4 per cent., semi-annual, payable Dec. 29.

Chicago, St. Paul, Minneapolis & Omaha, 1½ per cent., quarterly, on the preferred stock, payable Jan. 20. Transfer books close Dec. 30.

Northern Central, 4 per cent., semi-annual, payable Jan. 15. Transfer books close Dec. 30. The last dividend was 3 per cent.

Flint & Pere Marquette, 3½ per cent., semi-annual, payable Jan. 15.

Foreclosure Sales.

The Columbus, Chicago & Indiana Central road will be sold in Indianapolis, Jan. 10, 1883, under the decree lately granted. The terms of the decree and the arrangements made for reorganizing the company have already been fully set forth.

Western Association of General Passenger and Ticket Agents.

At the meeting of this Association in Indianapolis, Dec. 12, the following resolution was passed, as noted last week:

"Resolved, That the Secretary of this Association be instructed to notify the Pacific Coast lines that from and after Jan. 1, 1883, all lines running east from Kansas City, Leavenworth, Atchison, St. Joseph, Pacific Junction and Council Bluffs, will demand their proper proportion of rates based on second class rates from said points, to all points east thereof, on all through second-class, third-class and emigrant tickets from the Pacific Coast."

A note from the Secretary is now received to the following effect:

"The above resolution was passed, with the understanding that it would be inoperative, unless the unanimous assent of all lines interested was obtained. Said assent cannot be procured, and the resolution is therefore void and of no effect."

Middle & Western States Freight Association.

At a meeting held in Indianapolis Dec. 12 and 13, it was decided to reorganize this Association, and a committee was appointed to prepare rules, etc., and report to the next meeting.

A revised tariff of rates from Western points to the

termini of the trunk lines was agreed on, and it is to be referred to Commissioner Frank and the Executive Committee for approval. The subject of extending the number of through billing points in the West was discussed and finally referred to a committee of seven to report at a future meeting a plan by which the Association may be enabled to protect its members in the matter of through rates consisting of E. B. Shahlman, of the Louisville, New Albany & Cincinnati; F. H. Kingsbury and D. T. McCabe, of the Pat Handie; R. M. Fraser, of the Michigan & Ohio; J. T. R. M. Kay, of the Lake Shore; J. M. Osborn, of the Wabash; and G. Cochran, of the New York, Pennsylvania & Ohio.

American Street Railway Association.

A meeting of officers of street railroads was held in Boston, Dec. 12, for the purpose of forming an Association. Moody Merrill, of Boston, was elected temporary chairman, and C. B. Clegg, of Ohio, and C. C. Woodruff, New York, secretaries.

Chairman Merrill, in his address, said: There are now organized and doing business in this country and Canada 415 street railroads. These companies employ about 35,000 men and run 18,000 cars. More than 100,000 horses are in daily use, to which it requires annually 150,000 tons of hay and 11,000,000 bushels of grain. These companies own and operate over 3,000 miles of track. The whole number of passengers carried annually is over 1,212,400,000. The amount of capital invested exceeds \$150,000,000. It was resolved to form an association, and a committee was appointed to arrange details.

On the following day the committee appointed to present a constitution and by-laws reported in a draft, which was submitted to the convention, stating that the objects of the association were to cultivate a spirit of fraternity among those connected with street railroad management, and to promote the progress and improvement in the methods of operation. The Association shall consist of American street railroad companies, owners or lessees of railroads. The annual meeting shall be held the last Wednesday in May.

In the evening the delegates present were entertained at dinner by the Boston members.

The Association was formally joined by 35 members. It was decided to hold the next meeting in October, in Chicago.

Cleveland, Columbus, Cincinnati & Indianapolis Mutual Insurance Association.

The thirteenth annual meeting of this Association was held in Springfield, O., Dec. 13. The reports presented showed that the present membership is 1,183, against 1,289 one year ago; deaths during the year, 20; total assessments paid on claims for the past year, \$24,866; total since organization, \$231,051.15; balance in treasury, \$523.

The by-laws were amended so as to admit members up to 50 years of age. The question of admitting Indianapolis & St. Louis employees was postponed to next meeting.

Southern Railway & Steamship Association.

The adjourned session of the eighth annual convention was to have been held Dec. 21, but on Dec. 15 the following circular was issued:

"Owing to inability of several prominent members to attend on the 21st inst., the adjourned session of the eighth annual convention of the Southern Railway & Steamship Association, called for Thursday, Dec. 21, 1882, is hereby postponed until Tuesday, Jan. 16, 1883, on which date it will assemble at the Metropolitan Hotel, Washington.

"All transportation companies, members or working with the Association, are requested to send duly authorized representatives. Directors and committees from stockholders of companies, members of the Association, are under the rules invited to attend. The Convention will be called to order at noon."

ELECTIONS AND APPOINTMENTS.

Allegheny Extension.—At the annual meeting in Richmond, Va., last week, the following directors were chosen: A. Y. Stokes, C. E. Wortham, Richmond; Wm. M. Burnett, F. O. French, E. R. Leland, Samuel Shethar, J. W. Simpson, New York.

American Street Railway Association.—The officers of this new association are as follows: President, H. H. Littell, Louisville; Vice-Presidents, W. H. Hazard, Brooklyn, C. A. Richards, Boston, and G. B. Kerper, Cincinnati; Secretary and Treasurer, W. J. Richardson, Brooklyn; Executive Committee, Julius S. Walsh, St. Louis, Charles Cleminshaw, Troy, J. K. Lake, Chicago, Thomas Lowery, St. Paul, and D. F. Longstreet, Providence.

Chicago, Rock Island & Pacific.—Mr. J. Francis Lee is appointed General Agent (passenger and ticket department) in charge of Canada and the Provinces. Mr. C. E. McPherson is appointed Assistant General Agent, with headquarters at Toronto, Ont. Communications will be addressed to the General Agent at Toronto, as heretofore.

Chicago, St. Paul, Minneapolis & Omaha.—At a meeting of the board held Dec. 16, Messrs. W. K. Vanderbilt, Cornelius Vanderbilt, Augustus Schell, H. McK. Twombly, Albert Kepp, John C. Spooner, Marvin Hough, and M. L. Sykes were chosen directors, in place of H. R. Bishop, J. M. Fiske, A. Kountze, H. F. Welles, R. R. Cable, H. H. Porter, E. F. Drake and Benjamin Brewster, resigned. Messrs. David Dow, R. P. Flower, Philetus Sawyer, W. D. Washburn and A. H. Viele remain on the board.

The board then proceeded to choose new officers as follows: President, Marvin Hough; Vice-President, Treasurer and Assistant Secretary, M. L. Sykes; Secretary, C. W. Porter; Executive Committee, W. K. Vanderbilt, Cornelius Vanderbilt, Albert Kepp, Augustus Schell, M. L. Sykes and John C. Spooner.

This places the management entirely under Chicago & Northwestern control.

Cincinnati & Eastern Connection.—The following directors have been chosen: W. R. McGill, G. H. Wilbur, N. R. Thompson, S. Woodward, O. H. Hardin, W. Mansfield, M. Jameson, S. Feike, J. W. Henley.

Cleveland, Columbus, Cincinnati & Indianapolis Mutual Insurance Association.—At the annual meeting in Springfield, O., Dec. 13, the following officers were elected for the ensuing year: President, Robert Bee; First Vice-President, C. C. Gale, Indianapolis; Second Vice-President, C. Potter, Delaware; General Secretary, George W. Burt, Galion; Treasurer, T. J. Higgins, Cleveland; Auditor, D. M. Eason, Cleveland.

Cleveland, Tuscarawas Valley & Wheeling.—Mr. Charles Warburton, General Foreman, is acting as Master Mechanic until further notice.

Duluth & Iron Range.—At the annual meeting recently the following directors were chosen: C. P. Bailey, J. B. Culver, H. F. Thompson, Duluth, Minn.; F. L. Blomert, R. H. Lee, G. C. Stone, St. Paul, Minn.; Edward Breitling, Neogaunee, Mich.; Charlemagne Tower, Jr., Philadelphia.

The board elected G. C. Stone, President; H. F. Thompson, Secretary and Treasurer; R. H. Lee, Chief Engineer.

Duluth & Winnipeg.—At the annual meeting in Duluth, Minn., Dec. 15, the old directors were dropped and an entirely new board elected, as follows: W. W. Spaulding, R. C. Mitchell, H. M. Payton, James Borden, A. M. Miller, A. J. Sawyer, J. C. Hunter. The new board elected W. W. Spaulding, President; A. M. Miller, Vice-President, and J. C. Hunter, Secretary and Treasurer.

Flint & Pere Marquette.—Mr. W. W. Crapo has been chosen President in place of Jesse Hoyt, deceased.

Ft. Worth & Southern.—The directors of this new company are: Thomas Davenport, James C. Gilbreath, Wm. J. King, Wm. B. Turman.

Ft. Worth & Denver City.—At the annual meeting in Ft. Worth, Dec. 13, the following directors were chosen: W. A. Ross, C. S. Frost, J. W. Swayne, J. P. Smith, Ft. Worth, Tex.; J. M. Eddy, Sedalia, Mo.; D. Feuerheld, San Francisco; W. T. Walters, Baltimore; T. W. Pearsall, Wager Swayne, New York. The board elected J. M. Eddy, President; T. W. Pearsall, Vice-President; W. A. Ross, Secretary; C. S. Frost, Treasurer.

Hartford & Connecticut Western.—At the annual meeting in Hartford, Dec. 19, the following directors were chosen: C. F. Hillyer, J. F. Jones, L. B. Merrim, Hartford, Conn.; J. O. Phelps, Simsbury, Conn.; W. L. Gilbert, Winsted, Conn.; Wm. H. Barnum, L. Dunning, A. H. Holley, Frederick Miles, Simsbury, Conn.; R. B. Carpenter, Thomas Cornell, S. G. Dimock, Rondout, N. Y.; E. F. Butler, New York. Messrs. Carpenter, Dimock and Phelps are new directors.

International.—The board has elected J. H. Pope, President; Noah Woods, Vice-President; J. F. Rawson, Clerk; C. F. Woodruff, Treasurer. Office in Bangor, Maine.

Lehigh Valley.—Mr. James Donnelly, heretofore Assistant Superintendent of New Jersey Division, has been appointed Superintendent of New Jersey Division. His office will be at heretofore at Perth Amboy, N. J.

Mexican Central.—Mr. Wm. Conner has been appointed Inspector of locomotives, rolling stock and supplies for this company.

Mexican National.—The following order is dated City of Mexico, Nov. 15:

"Mr. John Scullin is appointed General Manager of the Southern General Division of the Mexican National Construction Co. and Mexican National Railway, with offices at No. 11, Calle Calvina, City of Mexico, and will be obeyed and respected accordingly. All chiefs of departments, officers and employees of the above named companies, engaged on the division, whether employed on survey, construction or operation of the road, will, therefore, from this date report directly to Mr. Scullin."

New York, Richfield Springs & Cooperstown.—The directors of this new company are: Joseph S. Lowery, F. A. Marquand, I. K. Hitchcock, Archibald D. Russell, H. I. Hardinburg, Chas. C. Munroe, Charles H. Coffin, Douglass Robinson, Jr., Andrew Spotts, New York; William Clark, Fort Plain, N. Y.; Samuel Wardwell, Rome, N. Y.; Leslie Fell Clark, Springfield, Mass.; George W. Alien, St. Louis.

Northern Central.—At a meeting of the board held Dec. 15, the following appointments were confirmed and will take effect Jan. 1: Robert Neilson, at present General Superintendent of the lines from Marysville to Canandaigua, to be General Superintendent of all the lines of the company; A. D. Dayton, at present Superintendent of Motive Power at Williamsport, to be Superintendent of Motive Power of all the lines of the company; G. C. Wilkins, at present General Superintendent of Baltimore Division, to be General Agent at Baltimore; H. W. Kapp, at present Train-Master, to be Superintendent of the Baltimore Division.

Rochester & Pittsburgh.—The following appointments have been made, taking effect Dec. 1: L. S. Emery, Assistant General Passenger and Ticket Agent; H. S. Henderson, Train-Master, with headquarters at Rochester, N. Y.

St. Louis & Chicago.—The directors of this new company are: R. H. Hazlett, H. H. Hood, T. C. Kirkland, Isaac Morrison, L. S. Olmstead. Office in Litchfield, Ill.

PERSONAL.

Mr. James A. Eads has resigned his position as Receiver of the Danville, Oley & Ohio River road.

Mr. W. A. Stone has resigned his position as Master Mechanic of the Cleveland, Tuscarawas Valley & Wheeling road.

Mr. J. W. Jones, for 10 years past Superintendent of the East St. Louis & Carondelet road, has resigned his position.

Mr. H. H. Porter has resigned his position as President and a director of the Chicago, St. Paul, Minnesota & Omaha Company, and will, it is said, retire altogether from business for a time.

Mr. Edgar Cranston, for eight years past Master of Transportation of the New York, Pennsylvania & Ohio, died Dec. 14, at Youngstown, O., from exhaustion of the brain, the result of an accident a few days ago.

George J. Rice, for some time past President of the Utica, Ithaca & Elmira Company, has been arrested and held for trial on charges of forgery and embezzlement. A fuller account of the affair will be found elsewhere.

Judge Robert Gould died at his residence in Richmond, Va., Dec. 15, aged 62 years. He was best known as a lawyer of high standing, and as Assistant Secretary of War and Confederate Commissioner for the exchange of prisoners during the war. For three years, from 1878 to 1881, he was President of the Richmond, Fredericksburg & Potomac Company.

Trenor W. Park, died Dec. 15, while on his way from New York to Aspinwall on the steamer "San Bias." He was born near Bennington, Vt., in 1823, and was still quite young, prominent in Vermont as a lawyer and politician. He was also connected with the Troy & Bennington, the Bennington & Rutland and other Vermont roads. In 1852 he went to California and was afterwards prominent in connection with the Mariposa and other mining properties. In 1862 he returned east and soon after acquired a controlling interest in the Panama Railroad, which he held until the recent sale to the Canal Company. He was also a director of the Pacific Mail Steamship Company.

TRAFFIC AND EARNINGS.

Grain Movement.

For the week ending Dec. 9 receipts and shipments of grain of all kinds at the eight reporting Northwestern markets and

receipts at the seven Atlantic ports have been, in bushels, for the past nine years:

Year.	Northwestern receipts.	Northwestern shipments.	Atlantic receipts.
1874	2,247,072	636,161	1,261,514
1875	2,129,850	742,915	1,835,211
1876	2,732,511	1,380,152	2,246,464
1877	2,808,567	1,172,719	2,463,069
1878	3,834,457	1,453,004	3,097,492
1879	3,611,180	869,623	2,703,737
1880	4,852,388	1,181,301	3,699,096
1881	3,178,051	1,926,288	2,302,700
1882	5,266,607	2,032,704	3,401,907

Thus the receipts of the Northwestern market for the week were larger this year than in the corresponding week of any previous year, and 66 per cent. more than last year. They were 250,000 bushels less than the week before, but with that exception were the largest for five weeks. Almost always heretofore there has been a large falling off after November.

The shipments of the markets were also larger than in any previous year, though nearly the same as last year, when rates were not half as high. The shipments were all by rail except 231,971 bushels (11.4 per cent.) which went down the Mississippi. There is a decrease of 857,000 bushels from the week before, nearly all due to the close of lake navigation, though there was some decrease in rail shipments.

The Atlantic receipts have been exceeded in the corresponding week of no previous year except 1880, and they are 1,100,000 bushels (48 per cent.) more than last year. They are smaller than in previous weeks as is usual after canal receipts cease.

Of the Northwestern receipts Chicago had 50.6 per cent., St. Louis 16.5, Milwaukee 10.8, Toledo 6.4, Peoria 6, Detroit 5.4, Duluth 2.6, and Cleveland 1.7 per cent. Compared with the previous week there is a large decrease at St. Louis and Peoria, and an increase elsewhere.

Of the Atlantic receipts New York had 48.1 per cent., Baltimore 19, Boston 12, New Orleans 9.7, Philadelphia 9.3, Portland 1.6, and Montreal 0.3. We find here the changes that usually follow the closing of lake and canal navigation. Compared with the previous week there was a decrease of 988,000 bushels; but at New York the decrease was 1,406,000, while there was a gain everywhere else except at Montreal, where receipts are entirely insignificant while navigation is closed. The Philadelphia receipts are the largest for five weeks, and with one exception the largest since the middle of September. The Baltimore receipts are the largest since September.

Of the exports of the week, amounting to 1,394,208 bushels, 63.5 per cent. went from New York, 16.2 from Baltimore, 9.7 from Philadelphia, 4.4 from New Orleans, 4.2 from Portland, and 2 per cent. from Boston.

Exports for the week ending Dec. 13, for three years have been:

	1882.	1881.	1880.
Flour, bbls.	191,911	16,438	153,372
Grain, bush.	1,225,620	982,004	2,646,707

Receipts and shipments at Chicago and Milwaukee for the week ending Dec. 16 were:

	Receipts.	Shipments.
1882.	1881.	1880.
Chicago.....	2,448,380	1,585,173
Milwaukee	667,247	458,122

Bushels..... 3,115,627 2,043,295 1,430,165 1,128,999

There is an increase of more than 50 per cent. in the receipts, but only 2½ per cent. in the shipments.

For the week ending Dec. 16 receipts at four Eastern ports have been, for three years:

	New York.	Boston.	Philad.	Baltimore.	Total.
1882.....	1,341,953	319,463	233,150	503,612	2,398,178
1881.....	701,181	365,449	191,930	57,415	1,815,955
1880.....	1,215,172	604,700	768,451	875,480	3,633,803
P. c. of total :					
1882.....	50.0	13.3	9.7	21.0	100.0
1881.....	38.6	20.1	10.6	30.7	100.0
1880.....	33.1	17.4	22.2	25.3	100.0

Philadelphia and Boston together received 30.7 per cent. of the whole this year, against 41.3 last year and 47.5 in 1880. New York's proportion this year was unusually large for a week without canal receipts. Corn now begins to make an important figure in the receipts, but the receipts are almost exclusively for domestic consumption, which causes them to be largest where consumption is largest, namely, at New York. If the corn was largely exported now it would be likely to go to New Orleans and Baltimore more than usual when exports are large, because the corn fit to ship thus early comes chiefly from the more southerly part of the corn district—the Ohio Valley, Missouri and Kansas—which can ship to Baltimore and New Orleans more conveniently than the country further north.

The flour receipts at these four ports were 376,461 barrels, against 149,221 last year, and this year were equivalent to more than three fourths of the grain receipts. Of the flour receipts 46.8 per cent. was at New York and 44.1 per cent. at Boston—only 5.3 per cent. at Philadelphia and 3.8 at Baltimore. New York and Boston in this week received more than three times as much flour as in the corresponding week of last year; Philadelphia 12 per cent. less.

Coal Movement.

Coal tonnages for the week ending Dec. 9 are reported as follows:

	1882.	1881.	Inc. or Dec.	P. c.
Anthracite	675,548	615,708	I. 50,840	9.7
Semi-bituminous	106,931	114,076	D. 7,145	0.3
Bituminous, Pa.	61,518	66,112	D. 4,584	0.9
Coke, Pa.	58,118	58,382	D. 264	0.4

The anthracite trade is in an unsettled state, and prices are reported lower. There is some talk of stopping work for two weeks in January, but nothing has been settled about it yet.

The production of the Colorado Coal & Iron Co. in November was 56,115 tons of coal and 11,914 tons of coke. The shipments of coke were 9,732 tons.

The coal tonnage of the Pennsylvania Railroad for the week ending Dec. 9 was: Coal, 160,195; coke, 58,118; total, 218,313 tons. The total tonnage this year to Dec. 9 was 10,416,174 tons.

Anthracite coal tonnages for November and the eleven months ending Nov. 30, as reported by the Official Accountant, in form differing somewhat from the weekly statements, were as follows:

	November.	Eleven months.
Phila. & Reading	1882.	1881.
Lehigh Valley	728,607	690,764
Central, N. J.	528,210	551,449
Del. Lacka. & West.	377,613	380,785
Del. & Hud. C. Co.	416,334	423,461
Penn. R. R. Co.	343,628	320,634
Penn. Coal Co.	196,271	195,188
N. Y., L. E. & W.	142,122	150,718
Total.....	2,797,372	2,727,871

Increase for the month, 69,501 tons, or 2.5 per cent.

The Delaware, Lackawanna & Western, the Pennsylvania Coal Company and the New York, Lake Erie & Western show decreases, the other companies increases.

Increase for the eleven months, 745,367 tons, or 2.9 per cent. The Delaware & Hudson and the Erie are the only companies showing a loss this year.

Of the tonnage for the eleven months this year the Reading furnished 24.0 per cent.; the Lehigh Valley, 20.4 per cent.; the New Jersey Central, 14.6 per cent.; the Lackawanna, 15.9 per cent.; the Delaware & Hudson, 10.9 per cent.; the Pennsylvania Railroad, 8.2 per cent.; the Pennsylvania Coal Company, 5.1 per cent.; and the Erie, 0.9 per cent.

The stock of coal on hand at tidewater shipping points Nov. 30 was 555,891 tons, against 524,050 tons Oct. 31, an increase of 11,841 tons, or 2.3 per cent., during the month, an unfavorable sign for the trade.

San Francisco coal receipts in November were \$7,264 tons. For the eleven months ending Nov. 30 they were: 1882, 775,212; 1881, 854,017; decrease, 78,805 tons, or 9.2 per cent. Of the total this year 434,468 tons were Pacific Coast coals; 84,105 Eastern (anthracite and Cumberland); 144,695 Australian; 161,944 English; total, 775,512 tons.

The coal tonnage of the Chesapeake & Ohio Railroad for the eleven months ending Nov. 30 was:

	1882.	1881.	Increase.	P. c.
Coal....	774,117	641,423	142,694	22.3
Coke....	83,847	69,344	14,503	21.0
Total.....	867,964	710,767	157,197	22.1

Of the coal this year 29,257 tons were cannel; 310,209 gas coal; 115,933 splint and block; 828,718 New River; total, 784,117 tons.

Cumberland coal tonnage reported for the week ending Dec. 16 was 41,855 tons. The total tonnage this year to Dec. 16 was 1,429,152 tons.

Railroad Earnings.

Earnings for various periods are reported as follows:

Eleven months ending Nov. 30:

	1882.	1881.	Inc. or Dec.	P. c.
Ale. Gt. Southern..	\$701,945	\$702,475	I. \$59,470	8.5
Col. H. V. & Tol.	2,626,733			
D's M. & Ft. Dodge	318,757	360,617	D. 47,880	13.3
Flint & P. M.	1,950,759	1,76,326	I. 244,433	14.3
Hous. & W. T.	240,790	148,886	I. 95,904	65.6
Kan. C. Ft. S. & G.	1,58,115	1,394,463	I. 188,632	13.5
Or. Ry. & Nav. Co.	4,079,000	4,079,000	I. 649,705	16.1
Peoria, Dec. & Ev.	707,874	627,562	I. 80,312	12.8
St. Louis & Cairo..	345,463	386,267	D. 40,804	10.6
Union Pacific....	27,903,341	27,471,981	I. 431,360	1.6
Vicks. & Meridian..	417,529	.....	.....	.....

Two months ending Oct. 21:

	1882.	1881.	Inc. or Dec.	P. c.
Eliz. Lex. & Big. S.	\$421,041	.....	.....	.....
Oregon Imp. Co.	2,801,908	.....	.....	.....

Month of October:

	Danbury & Norwalk			
Eliz. Lex. & Big. S.	\$20,510	\$17,588	I.	\$2,922
Sandy.....	58,289	.....	.....	.....
Oregon & Cal.	115,500	.....	.....	.....
Oregon Imp. Co.	435,668	.....	.....	.....

Month of November:

	Ala. Gt. Southern.			
Central, Ga.	\$98,097	\$78,257	I.	\$10,840
Central, Ga.	411,80	419,554</		

stock. The defence is that the statements were true and were published as current news.

Duluth & Winnipeg.—A year ago a contract was made with Boston parties, who agreed to begin work upon the road at once, and were allowed to select its directors and officers. They have failed to do anything, and at the annual meeting last week the Boston men were all dropped, and the original incorporators of the company put in their places.

East Tennessee, Virginia & Georgia.—The surveyors of the proposed Florida Branch of the Macon & Brunswick Division are now running a new line from a point about 10 miles above Jesup, Ga., crossing the Brunswick & Albany at Jamaica.

Florida Southern.—Application was recently made for the appointment of a receiver for this road. The Court granted the order, but subsequently allowed a motion to vacate it, on which argument was to be heard this week.

Forest Park & Central.—It is said that this road has been sold to the St. Louis, Hannibal & Keokuk Company. It is a short suburban line running out of St. Louis, and its value consists in the right of way into the city.

Ft. Smith & Southern.—This company has been organized to build a railroad from Ft. Smith, Ark., south by east to Waldron in Scott County, a distance of 50 miles. The capital stock is to be \$250,000.

Georgia Pacific.—The track layers working from Columbus, Miss., eastward have recently begun at the end of the 20-mile section laid some time ago, and are now putting down the rails from Millport in Lamar County, Ala., northeast to Fayette Court House, about 20 miles.

International.—At the annual meeting in Bangor, Me., last week, Superintendent McFee presented the report of the engineer on the location of the line. The report was accepted, and it was voted to file the papers in the counties of Franklin, Somerset, Piscataquis and Penobscot, all in Maine. The statement was made that 10 miles of road from the northwestern boundary of Maine were now under contract, and 10 miles more will be let to contractors within a few days.

Little Miami.—In Cincinnati, Dec. 19, the directors awarded all the new bonds not previously sold, \$1,260,000 in amount, to a New York syndicate represented by Albert Netter, of Cincinnati, at 101 and interest. The total issue is \$1,500,000, and the new bonds take the place of an equal amount of first-mortgage bonds now maturing.

Little Rock & Choctaw.—This company has filed articles of incorporation for a railroad from Little Rock, Ark., west to the Indian Territory line.

Longview & Sabine Valley.—Work is to be begun at once on the extension of this road to the Sabine River. It has been for several years in operation for 17 miles out from Longview, Tex., as a lumber road.

Louisville, New Albany & Chicago.—It is said that this company will build a branch about 20 miles long from Bainbridge, Ind., southwest to Brazil, to reach the black coal field around that town. The branch will be on the line of the projected Indianapolis & Springfield road, upon which some grading has been done.

The company is now competing quite actively with the Chicago & Eastern Illinois for coal business from the Indiana coal fields to Chicago.

Manhattan Beach.—The car-house of this company at Bay Ridge, N. Y., where a large part of its equipment is stored during the winter, caught fire on the morning of Dec. 14, and was entirely destroyed, with 10 engines, 48 passenger cars and 13 parlor cars. The loss is over \$100,000, but is pretty well covered by insurance. No one was about the building at the time but two watchmen.

Marietta & Cincinnati.—In Chillicothe, O., Dec. 20, the Court entered an order confirming the sale of this road to the bondholders' committee. The plan of reorganization can now be carried out without further delay.

Meridian, Gainesville & Decatur.—This proposed road is to run from Narkeeta, Miss., on the Mobile & Ohio road northwest to Decatur, Ala., about 150 miles. It will enter the Black Warrior coal field about 70 miles from Narkeeta, and will run through the coal district for a number of miles. The company is now trying to secure subscriptions in Mobile.

Mexican Central.—This road is now open from the city of Mexico to Guanajuato. The track is finished to within 10½ miles of Lagos.

On the San Luis-Tampico Division in November 600 Mexican and 150 foreigners were employed. Work is being pushed on the first section of 100 kilometres from Tampico.

Mexican Railroad Concessions.—The Mexican Financier says:

"The Minister of Public Works in behalf of the Executive has allowed certain modifications to the concession granted to Robert R. Symon on Dec. 15, 1880, for the construction of a railroad from the coal lands of the Yaqui River to the bay of Guaymas, in Sonora. These modifications oblige the grantee to begin construction within 14 months, and to complete the road within four years and two months from the promulgation of the contract."

"Messrs. Agustin del Rio and Ed. Vifas have secured a concession for the building of a tramway from the railroad station of the Mexican National road to the plaza and around the entire city of Toluca. The materials for construction have been supplied by the Mexican National Company, the tramway paying the cost. A special car left this city for Toluca on Sunday, Nov. 19, when the above enterprise was inaugurated."

New York Central & Hudson River.—The Buffalo Express of Dec. 18 says: "The past week has brought little relief to the Buffalo roads from the great pressure of eastbound freight. There has not been a day for the past week or so when shipments east by the Central did not reach 3,000 cars or more. On Friday 3,700 loaded cars left this city by the New York Central. If the reader will reflect that this means about 100 trains in one direction within 24 hours, not counting local freights, he will get some idea of the situation. Last summer's harvests are flowing through this city in an enormous stream. The Lake Shore brings in daily from 1,500 to 2,000 loaded cars. A good deal of Lake Shore freight is brought into the city over the Nickel-plate road, and sidings are full for many miles to the westward. The Canada Southern is equally crowded. A reporter of the Express made a tour of the freight yards around Buffalo on Saturday, and found the same pressure everywhere. At the Canada Southern yard on the hill at Victoria, were over 100 loaded cars, waiting a chance to get across the bridge; but the Back Rock yards were also full, though trains were being made up and sent out with great celerity. Over 10,000 east-bound cars passed over the International Bridge last month, for the Canada Southern alone, and about 6,000 empties went west by the Southern from Buffalo. The Lackawanna engines now in use on the road are doing great service, as they can pull extra heavy

trains. The amount of skill required to keep these great yards in shape and prevent embarrassing delays in handling the cars, can only be appreciated by visiting them."

New York, Richfield Springs & Cooperstown.—This company has been organized to build a railroad from Fort Plain, N. Y., west by south to Richfield Springs, with a branch to Cooperstown—in all about 32 miles of road. It is designed to give those two noted summer resorts more direct connection with the New York Central and the West Shore roads.

Northern Pacific.—The tracklayers are reported 25 miles beyond the late terminus at Livingston, Montana, and hope to reach the Bozeman tunnel by the end of the year. A temporary switch-back will be laid over the mountains, so that the work of extension need not be suspended while the tunnel is incomplete.

The Fargo & Southwestern Branch is now completed to Lisbon, Dak., 15 miles southwest of the late terminus at Sheldon, and 55 miles from Fargo. A large amount of wheat has been stored at Lisbon, waiting the completion of the road.

North Shore.—The Boston Advertiser says: "Regarding the purchase of the North Shore Railway, from Montreal to Quebec, the Advertiser learns from undoubted authority that the transfer to the Grand Trunk & Vermont Central was brought about by their purchase of a majority of the stock of the road, and that the purchase money has already been paid over. This North Shore road, which had been under contract with the Canada Pacific and the Southeastern, was an important factor in the business of that line, and its loss will be a severe blow. The Grand Trunk and the Central Vermont will operate it jointly. The new traffic arrangement between these two roads will make no change in their manner of operating, but will simply bring about a closer union of interests. They have so much in common in the establishment of a through line from the West and North to the Atlantic seaboard, that such a union cannot fail to be mutually advantageous."

Ohio & Mississippi.—Receiver Douglas reports to the Court for November as follows:

Cash on hand, Nov. 1.....	\$168,468
Receipts from all sources.....	590,399
Total.....	\$758,865
Pay-rolls, vouchers, etc.....	\$566,702
Springfield Div. coupons.....	70,000
	636,702
Balance, Dec. 1.....	\$122,162

The disbursements exceeded the receipts by \$46,304 for the month.

Old Colony.—Some time ago the Boston City Council resolved to extend D street in South Boston across this company's tracks. To avoid a troublesome grade crossing the company offered to raise its road and bridge the new street, provided the city would pay part of the cost, and this was agreed to, the city's proportion being fixed at \$45,000. The improvement is thus described by the Boston Herald:

"The project of raising the tracks over the street having thus been endorsed by the city the management of the Old Colony proceeded to make arrangements for doing the work. In what manner to accomplish the undertaking was a problem presenting many difficulties. Of course the regular daily business of the road must not be interrupted. Every day the hundred trains must pass over the tracks as usual while the roadbed was being raised foot by foot. The Chief Engineer of the road, Mr. George S. Morrill, was equal to the emergency and proposed to the management that temporary tracks be laid just west of the regular track, thus leaving the entire road-bed for half a mile, between Dorchester Avenue and Dorchester Street, unobstructed by passing trains. The plan commanded itself, but another difficulty was met with. The railroad company did not own the land that would be needed for the temporary tracks, and, although it might be purchased or hired, there was a possibility that some contrary individual might refuse and in that case the project could not be carried out. To guard against all possible difficulties of that kind the company went to the Legislature last winter and obtained authority to take such land adjoining its railroad in South Boston, not exceeding 25 ft. in width, as the directors might deem necessary for raising its road over the proposed extension of D street. It also obtained authority to temporarily take, for 10 months, for the purpose of changing its tracks while the work of raising its railroad was going on, so much land as might be necessary to construct and maintain the proposed two temporary tracks. The act was approved by the Governor Feb. 14. On April 1 the work of laying the two temporary tracks was begun and in just six months, to a day, the cars began running over the completed elevated roadbed. Considering the magnitude of the work the time occupied in doing it was short, and Chief Engineer Morrill, under whose supervision the work has been done, is to be congratulated upon its successful completion. The entire roadbed, for half a mile in length, had to be raised until it was 11 ft. high at D street, descending on either side to Dorchester Avenue and Dorchester Street respectively. But this work constituted a small part of the undertaking. It was found that where the abutments for the bridge at D street were to be constructed there was a deep bed of mud, and piles had to be driven 30 ft. into the ground. In order to give a firm foundation for the abutments, 500 piles were driven, and a solid foundation of stone was laid on top of them, 5 ft. under ground. But even this was not all the difficulty met with. It was found necessary to build a wall of granite masonry on the east side for the entire length of the raised track. No piles were driven for this, however, but the earth was excavated down six feet or more until hard pan was reached, and the heavy granite wall was then built, varying in height from 2 to 14 or 16 ft. The thorough manner in which the entire masonry work was done reflects credit upon the contractors, Messrs. Ross, Sylvester & Parker. The roadbed was built to accommodate three tracks, the west side being sloping, the strip of 25 ft. in width authorized to be taken affording room for thus constructing the road. A contract was entered into with the Keystone Bridge Co., of Pennsylvania, for the construction of the bridge over D street. It is a wrought iron, plate girder bridge, wide enough for three tracks and some 50 ft. long, supported by iron columns standing on granite foundations between the sidewalks and the roadway of D street. It will be 13 ft. above the centre of the street when the extension is completed, the city being obliged to lower the grade of D street some 4 ft. to pass under the bridge. This grade will be very light when finished, in fact, less than either School or Broadmoor street. Two of the tracks are all completed, and in full working order, but the third track is not fully graded, though sufficiently so for use by gravel, coal and wood trains. In the spring it will be finished. The railroad company is building a substantial high fence along one side of the track, and proposes to erect a similar one on the other side, and thus the dangerous practice many people have of walking upon the tracks will be more under control. Although ostensibly this elevation of the tracks has been done solely to obviate the necessity of a grade crossing at D street, it will undoubtedly be utilized in the future to obviate similar cross-

ings when other streets are extended across the Old Colony railroad, and it would not be strange if in the near future witnessed a similar elevation of the road still farther out, for there are several dangerous grade crossings beyond D street, and no one recognizes this dangerous character more keenly than the officials of the Old Colony."

Oregon Improvement Co.—This company has issued a circular setting forth its plans for meeting the indebtedness incurred in the purchase of the Pacific Coast Steamship property and the improvements and additions thereto. The net earnings of the Improvement Company for 12 months (the month of November being partly estimated) were \$1,104,613. Deducting interest on bonds and sinking fund charges, there remained available \$779,618. This sum, added to the cash resources on hand at the beginning of the year, made an available total of \$1,437,150. Of this sum, there was expended for extending and improving the San Luis Obispo & Santa Maria Valley Railway (owned by the company), for finishing the new iron steamship "Queen of the Pacific," and for other purposes chargeable to construction, the sum of \$1,122,513, leaving available resources at the present time \$224,637. Therefore, only a small reduction of the indebtedness incurred by the Pacific Coast Steamship purchase was affected during the year, and no dividends were paid, although the net earnings were much in excess of the anticipations of the management. It is proposed now to issue \$2,000,000 of new stock at par, \$1,500,000 of which will be used to pay off the indebtedness mentioned, the remaining \$500,000 to remain unissued as an asset in the treasury. The right to subscribe for this stock at par will be first offered to the holders of the company's bonds (according to the terms of the mortgage). The stock not subscribed for by the bondholders will be offered to the stockholders of record Jan. 8. Bondholders will have the right to pay their subscriptions in bonds at par and accrued interest. The announcement is made that a dividend of 3½ per cent. will be paid March 15 out of earnings of the six months preceding, and that the earnings of the company appear to justify the continuance of dividends at the rate of 7 per cent. per annum. The company's bonded debt is \$4,950,000, and its present stock \$5,000,000. The proposed addition will increase the outstanding stock to \$6,000,000, with \$500,000 additional in the company's treasury.

Oregon Railway & Navigation Co.—The grading of this company's branch from Walla Walla, Wash. Ter., to Milton, 18 miles, is completed, and tracklaying has been begun. From Milton a third rail will be laid on the narrow-gauge branch running to Blue Mountain, seven miles further. This branch is to be extended next year by Weston, Centreville and Wild Horse Creek to Pendleton.

Philadelphia & Reading.—The Receivers will pay the interest due Jan. 1 on the general mortgage bonds. Up to July last interest on these bonds had been in arrears since the receivership (several coupons had also been funded in scrip), and the overdue coupons were then paid by the company.

The committee of the board of managers appointed to prepare a plan for the adjustment of the company's affairs has made a report which has been approved by the board. The details are still to be completed, and the plan has not been made public. It is understood, however, that it provides for the funding of the floating debt, the interest scrip and the junior issues of bonds, with accrued interest, in new consolidated 5 per cent. bonds, to be issued at 95, or at as high a price as can be fixed by arrangements with the creditors.

Pittsburgh, Bradford & Buffalo.—Track on this road is now completed to Sheffield Junction, Pa., 10 miles northeast of the late terminus at Frost's Mills and 65 miles from Foxburg. Work is being pushed toward Kane.

St. Louis & Chicago.—This company has filed articles of incorporation to build a railroad from East St. Louis, Ill., to Bloomington, on a line apparently intended to run parallel and near to the Chicago & Alton. The office is in Litchfield, Ill.

St. Louis, Hannibal & Keokuk.—This company is making preparations to build an extension of its road from Gilmore, Mo., to St. Louis, which city it now reaches over the Wabash, St. Louis & Pacific tracks. The extension will require a bridge over the Missouri. To secure the right of way into the city, it has bought the Forest Park & Central, a short suburban line out of St. Louis.

St. Louis, Iron Mountain & Southern.—The following circular was issued Dec. 15:

"The St. Louis, Iron Mountain & Southern Railway Company has extended its road in the state of Arkansas, from Forrest City to Helena, by purchase of the Iron Mountain & Helena Railroad.

"On and after Dec. 15, 1882, the above extension will be operated accordingly."

The Iron Mountain & Helena road is completed from Forrest City, Ark., to Helena, 43 miles. It is added to the Crowley Ridge Branch of the Iron Mountain road, now completed to Forrest City, and makes that branch 140 miles long, from the main line at Knobel to Helena.

St. Paul, Minneapolis & Manitoba.—On the Laramore Extension track is now laid to Bartlett, Dak., 20 miles northwest from Laramore and 53 miles from Grand Forks. Trains will be run to the new terminus at once.

Securities on the New York Stock Exchange.—The following securities have been put on the lists at the New York Stock Exchange:

Baldred, Eldred & Cuba, \$500,000 stock and \$500,000 first-mortgage bonds.

Burlington, Cedar Rapids & Northern, \$430,000 additional Cedar Rapids, Iowa Falls & Northwestern bonds on new road.

Milwaukee, Lake Shore & Western, \$255,000 additional consolidated bonds on new road.

Minneapolis & St. Louis, \$452,000 additional Pacific Extension bonds on new road.

St. Paul, Minneapolis & Manitoba, \$1,176,000 additional Dakota Extension bonds.

Southern Pacific, \$4,000,000 additional first-mortgage bonds, making \$33,520,000 in all.

Tonawanda Valley & Cuba, \$600,000 stock and \$500,000 first-mortgage bonds.

Wabash, St. Louis & Pacific, \$300,000 Illinois & Southern Iowa bonds, extended for 30 years at 6 per cent.

Union Pacific.—This company's statement for October and the ten months ending Oct. 31, is as follows:

	October.	Ten months.
Earnings.....	\$3,109,507	\$25,082,371
Expense.....	1,502,565	12,983,545
Net earnings.....	\$1,606,942	\$12,098,726

For the ten months there was an increase of \$333,899, or 1.4 per cent. in earnings.

The Boston Advertiser published Dec. 19 a letter from Charles Francis Adams, Jr., giving the results of his personal examination of the Union Pacific Railroad in October last. He says that some years ago, after his resignation of

the office of Government Director of the road, so much impressed was he with the value of the road as an investment, that, as an agent of certain persons and an adviser of others, he was instrumental in some heavy purchases of the stock as an investment. As an investment these have resulted well. Some months ago, when the present depression first began to affect the price of the stock, he began another examination of the road. During October he went carefully over the line in company with its officers, studying its system of feeders, informing himself as to its policy, and generally having every source of information freely open to him. There could be no question, he says, as to the greatly improved condition of the property between his examination of it in 1878 and his present examination. There could be equally little question, as to the development of the country or the business of the road. Returning East he found a veritable panic prevailing in respect to the stock. Every one he saw was a bear upon it. "So full was the air of all sorts of bear stories," he says, "that when I came to Boston I went at once to the office of the company, there to complete my inquiries. I did not go to the Treasurer, but as Mr. F. L. Ames is a friend of mine of long and intimate standing, I went to him and told him what I wanted to find out. He at once laid before me the private reports for the committee of directors bearing on these points, and told me to satisfy myself. I had before me all that he had to show. If I wanted anything more the original books were at my service. The results of all my inquiries have been a curious insight, not into the weak spots of the Union Pacific—these I will lay at once have escaped me."

"The insight has been into the ways and operations of Wall street. I have studied the several steps in one grand organized raid of a successful bear campaign. Had I time to follow it out I could make of it an account of no little interest. I could show the thorough knowledge of the Wall street operators of the way in which the stock was held, and how they based their plans upon this knowledge so as to shake the weak stock out. Unlike many other companies, the Union Pacific, with its 600,000 shares, was in no one's keeping. A great deal of the stock was floating about or carried on margin. There was a grand chance for bear campaign, and the bears knew it. The stock-list shows how skillfully, how persistently and how boldly they availed themselves of it." The whole result of his investigation, Mr. Adams says, has satisfied him of the investment value of this property, and he wants to see the control of it in New England. The Chicago, Burlington & Quincy and the Union Pacific constitute together the broad way of the continent. So far as occupying the country is concerned, the policy the company is pursuing, he says, is a thoroughly sound one. Its surplus earnings have for years been invested, and are now being invested, in feeders.

Utica, Ithaca & Elmira.—Some years ago the control of this road fell into the hands of King & Co., London bankers, and they sent out to this country George J. Rice, a clerk who had been some time in their service, to look after their interests. He was chosen President of the company and still holds that office. The road has not been prosperous, and a receiver was lately appointed on application of the creditors. This brought Mr. King out to investigate matters, and he has now caused Rice's arrest on charges of forgery and embezzlement from the company. Rice has been held for trial, but claims that he can clear himself. Among other charges against him is the issue of 10,000 shares of illegal stock.

Washington & Western.—Arrangements are being made to begin work on the extension of this road to Winchester, Va. A new line has been surveyed, which is said to be much better than the old location made nearly 10 years ago.

ANNUAL REPORTS.

(For other reports see page 788.)

Wilmington, Columbia & Augusta.

This company owns a line from Wilmington, N. C., to Columbia, S. C., 189 miles. From April 1, 1882, it has also worked the Central Railroad, of South Carolina, from Lanes, S. C., to Sumter, 40 miles. The report is for the year ending Sept. 30.

The equipment consists of 24 locomotives; 13 passenger and 10 postal and baggage cars; 368 box and 182 platform cars. Two heavy freight engines and 150 box cars were added last year.

The general account is as follows:

Stock	\$980,000.00
Bonds	1,600,000.00
Accounts and balances payable	151,639.34
Profit and loss	50,550.15
Total	\$2,762,189.49
Road and property	\$2,566,635.47
Stocks owned	26,194.71
Cash and accounts receivable	160,239.31
	2,762,189.49

The bonds are all of one issue, 6 per cent. first-mortgage bonds, due 1910.

The number of passengers carried was: Through, 26,738; local, 74,770; total, 101,508, an increase of 18,059, or 21.7 per cent., over the previous year.

The earnings for the year were as follows:

	1881-82	1880-81	Increase. P.c.
Freight	\$424,737	\$404,152	\$20,585 5 1
Passage	129,967	131,990	17,977 15.4
Mails, etc.	97,924	84,814	13,110 15.4
Total	\$602,698	\$604,956	\$51,672 8.1
Expenses	553,636	505,039	47,997 9.5
Net earnings	\$139,502	\$135,917	\$3,675 2.7
Gross earn. per mile	3,605	3,391	274 8.1
Net earn. per mile	738	719	19 2.7
Per cent. of exps.	70.85	78.80	1.05

The increase in expenses was due to larger renewals. There were 2,300 tons of steel rails laid during the year. Use has been made of the old iron rails taken up by leasing them to parties along the line, who have built short temporary lumber branches. A small rental is charged, and these branches bring a considerable business to the road.

The locomotive mileage for the year was as follows:

	1881-82	1880-81	In. or Dec.	P.c.
Passenger	265,310	254,981	L 10,335	4.1
Freight	244,091	226,018	L 18,073	8.0
Service and switching	92,617	75,751	L 16,866	22.3
Total	602,024	556,750	L 45,274	8.1
Avg. miles per engine	25,084	25,307	L 223	0.9
Cost per mile run	16,44 cts.	13,23 cts.	L 3.21 cts.	24.3

The increase cost of locomotive service was due to the higher cost of fuel, labor and materials last year.

President R. R. Bridgers' report states that contracts have been made for the equipment of the Atlantic Coast Line with new Pullman sleeping cars, this company's proportion of the cost being about \$48,000. The road also needs two new engines and four passenger cars, and to meet these expenses it will be necessary to increase the floating debt or suspend dividends for a time.

The income account was as follows:

Assets, Oct. 1, 1881	\$273,695.67
Gross earnings	602,628.52
Interest and miscellaneous	15,124.47
Increase of floating debt	45,748.42
Total	\$1,027,397.08
Expenses	\$553,036.57
New engines and cars, etc.	126,768.16
New coaches	22,175.39
Miscellaneous	2,517.63
Interest paid	96,000.00
Dividends, 8 per cent	57,600.00
	588,007.77

Assets, Oct. 1, 1882.

The net earnings for the year, after deducting interest, were equivalent to a little over 4½ per cent. on the stock.

The freight traffic has largely increased, but rates have been low. More business could have been taken had the equipment been sufficient. The road is now in better condition than it has ever been before.

A war reminiscence appears in the income account in an item of miscellaneous receipts, "Sale of Confederate bonds, Wilmington & Manchester Railroad, \$19,600."

The earnings of the Central Railroad (not included above) for the six months it was worked were as follows:

Earnings (\$80 per mile)	\$30,184.30
Expenses (52.74 per cent.)	20,675.28

Net earnings (\$463 per mile)

Rental, six months

Surplus

A considerable expenditure on the road-bed was required. The road carried 6,017 passengers, and is developing a considerable traffic in lumber and naval stores.

New York Central & Hudson River.

The following is this company's statement of operations for the fiscal year ending Sept. 30, 1882, as compared with the previous fiscal year:

	1881	1882
Capital stock	\$89,428,300.00	\$89,428,300.00
Funded debt	43,473,033.33	48,321.43
Unfunded debt	5,556,682.81	5,254,369.93

Total funded and unfunded debt

Increase in funded debt, \$5,000,000, the application of which will be found at the close of this statement.

COST OF ROAD AND EQUIPMENT.

Grading and masonry

Bridges

Superstructure

Buildings

Land

Engineering

Locomotives

Passenger and baggage cars

Freight cars

Floating equipment

Roch. & L. O. R.R.

Buffalo & Niagara Falls R.R.

Istion R.R.

Saratoga & Hudson River R.R.

Syracuse Junction R.R.

Junction (Buffalo) R.R.

Total

ASSETS.

LIABILITIES.

CHARGES AGAINST EARNINGS.

Transportation expenses

Interest

Value of leased lines

Dividends, 8 per cent.

N. Y. State tax on capital

N. Y. State tax on earnings

Total

Surplus or deficit

The number of passengers carried was as follows:

Through passengers

Way passengers

Total

The earnings and charges for the year were as follows:

EARINGS.

CHARGES AGAINST EARNINGS.

Transportation expenses

Interest

Value of leased lines

Dividends, 8 per cent.

N. Y. State tax on capital

N. Y. State tax on earnings

Total

Surplus or deficit

The profit and loss account for the two years is as follows:

1881

1882

Balance previous year

Surplus

Premium on bonds sold

Profit from sale of securities

Rental Saratoga & Hud. Riv. R.R.

Total

Surplus or deficit

The profit and loss account for the two years is as follows:

1881

1882

Balance previous year

Surplus

Premium on bonds sold

Profit from sale of securities

Rental Saratoga & Hud. Riv. R.R.

Total

Surplus or deficit

An analysis of traffic, earnings and expenses is given in the report as follows:

1881

1882

Gross earnings

Expenses

Total

Net earnings

Earnings per ton-mile

Expenses per ton-mile

Profit

Earnings per pass.-mile

Expenses per pass.-mile

Total

Surplus or deficit

The profit and loss account for the two years is as follows:

1881

1882

Balance previous year

Surplus

Premium on bonds sold

Profit from sale of securities

Rental Saratoga & Hud. Riv. R.R.

Total

Surplus or deficit

The increase in the cost of the road is represented by the following additions and betterments: